

Gotham Opens Show Circuit

MOTOR AGE

Vol. XXXI
No. 2

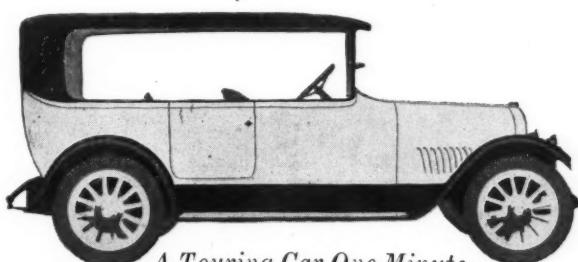
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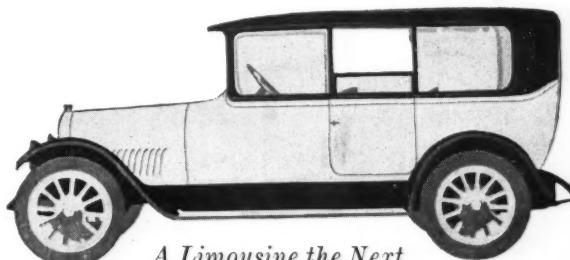
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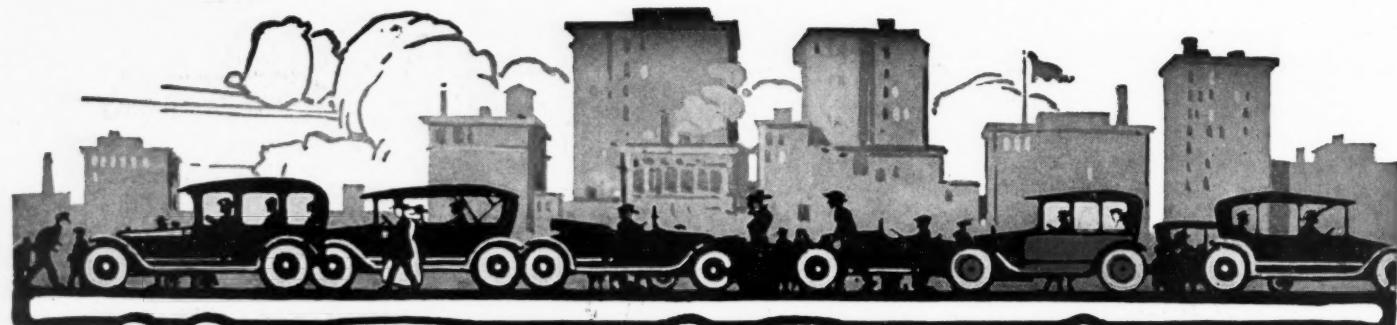
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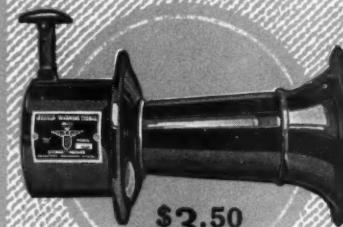
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ANNOUNCEMENT

"America's Riviera," which is to be the feature of Motor Age for January 18, will tell the tourist of the beauties of nature to be seen along the gulf coast marked by Pass Christian, Gulfport and Biloxi, Miss.

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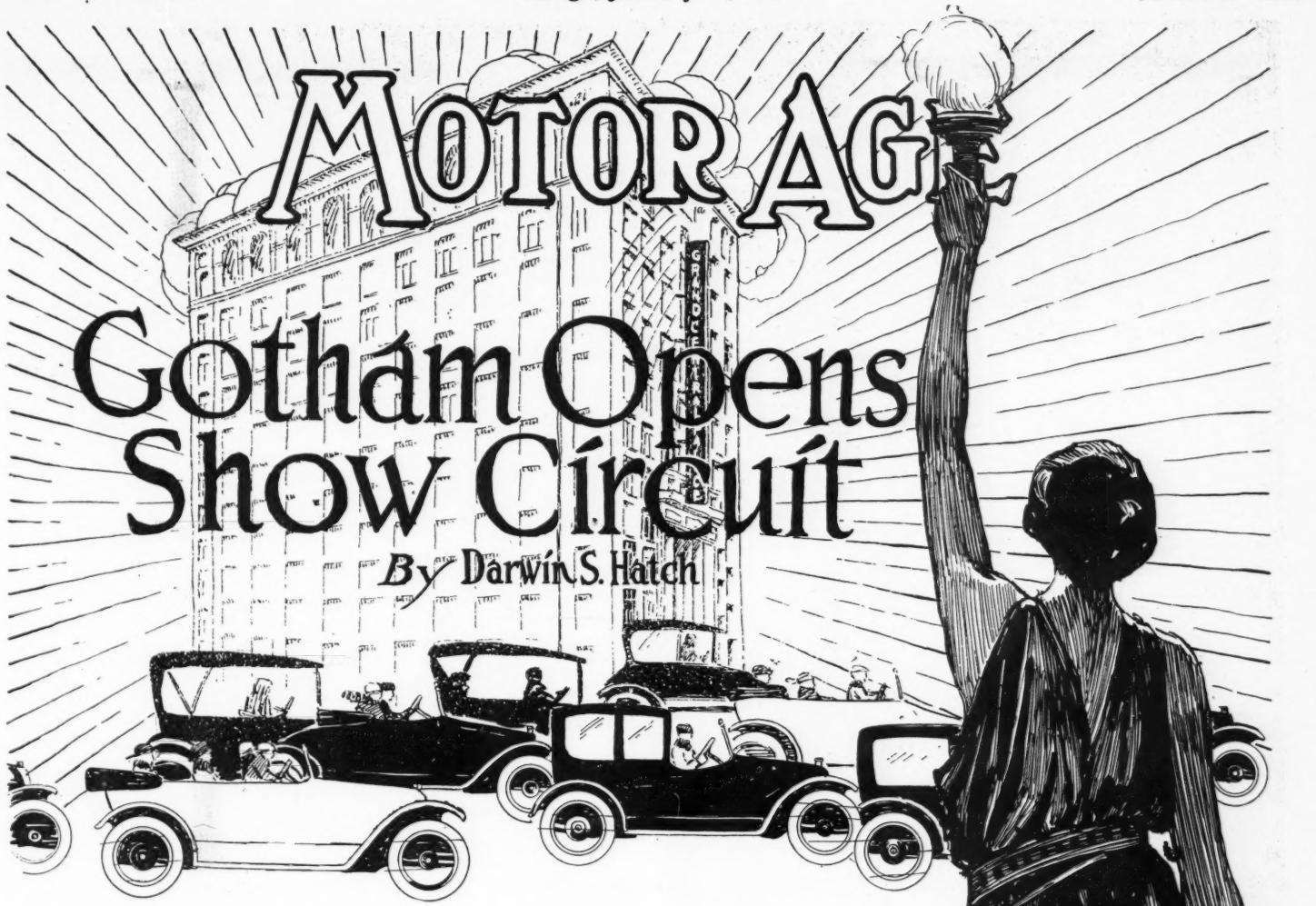
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Palace Show Finer Than Predecessors—High Record in Cars Exhibited

NEW YORK, Jan. 7.—The New Year in motordom was officially inaugurated this afternoon at the Grand Central Palace when the strains from a bugle announced the throwing open of the seventeenth annual national motor car show. It has become a matter of custom each year at this time to say that the present exhibition at the Grand Central Palace outshines, in point of number and quality of exhibits and in interest and quantity of attendance, all preceding exhibitions. This year the trite saying must be repeated.

In point of actual number of motor cars and chassis the show is ahead of a year ago. There are 339 cars on display, which is fifteen more than last year. Motor cars this year have again encroached on a territory previously allotted to accessories and have welled up from the third floor, which was their limit a year ago, to the choice spaces on the fourth and last floor of the Palace devoted to the exhibition. There are now cars on four floors. Merely from lack of space the accessories accordingly are more in the minority than they have been previously. There are 227 exhibitors of accessories on the third and fourth floors, only three-fourths as many as a year ago.

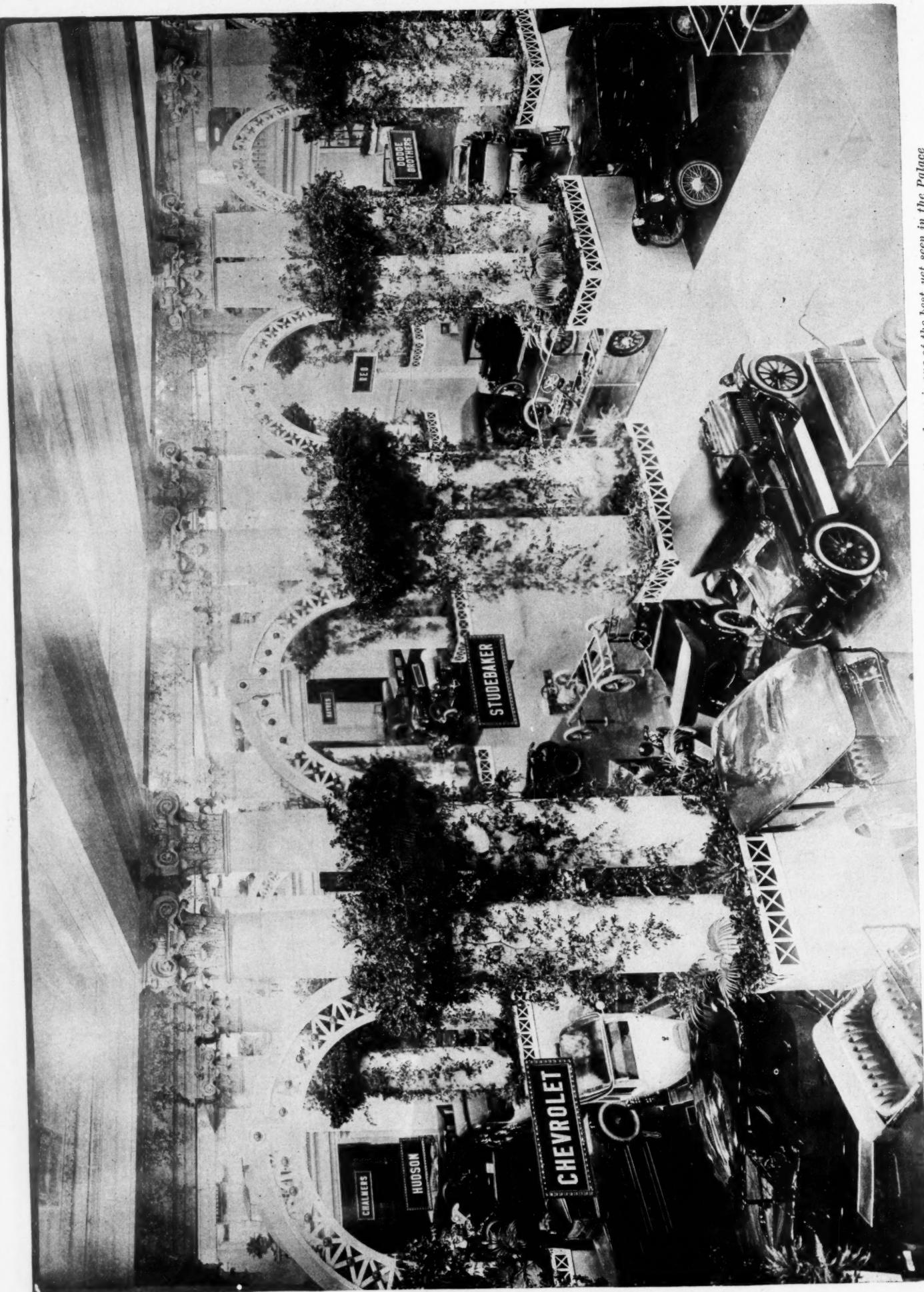
The opening at 2 o'clock this after-

noon was an impressive one. The formal address of opening was made by Francis Hugo, secretary of state of New York, as the official representative of the only state in the union boasting of over 300,000 cars. Secretary Hugo was introduced by Col. George Pope, veteran and the father of motor car exhibitions in America.

Before the doors were thrown open to the public there was an immense crowd waiting for admission, larger, it seems, than those which witnessed the premier of other years.

As usual, the Saturday afternoon and night crowds were record crowds. No sooner had the entrances been thrown open than the aisles began to fill up and in less than an hour every floor was more than comfortably crowded. First-nighters at the motor shows as a rule are not enthusiastic, the tendency usually being to look the gift horse in the mouth. Today, however, the visitors seemed to exhibit special interest in a number of features, the new steamers, the sixteen-valve engines and some of the striking body designs claiming most immediate attention.

In spite of rain all day Friday, the exhibits were ready when the doors opened and disclosed a well-planned garden of flowers as the setting for the exhibition.



General view of center part of main floor in Grand Central Palace, showing flower garden effect. The decorating scheme is one of the best yet seen in the Palace.

The four floors of the Grand Central Palace devoted to the exhibition were planned by Samuel A. Miles, its impresario and show manager for the National Automobile Chamber of Commerce, in a way to give a most impressive effect. The main floor of the palace is devoted wholly to cars and in the mezzanine, or second floor, overlooking a court of honor which rises to the fourth floor, only motor cars are shown. On the second balcony, or third floor, and on the fourth floor both accessories and motors hold sway.

The general scheme of decoration, simpler even than that of last year, consists of carrying out the idea of a palace of flowers. The massive columns of marble are surrounded by banks of poinsettias with trailing vines and the mural decorations carry out the poinsettia motive. In keeping with this color scheme the red and white exhibit signs harmonize well with the general scheme, as do the three vast chandeliers in the court of honor, whose lights are diffused through rose and golden glass.

As one gets his first view of the exhibition upon ascending the grand staircase at the entrance, he is compelled by the dominating location of the Willys-Overland exhibit, which has first position in the show allotted to the largest producer. This is at the right of the grand entrance and in the place of prominence in this exhibit is the polished steel chassis of the new Willys-Knight eight-cylinder.

Across the aisle is Buick, which, like Overland, has obtained this particular space for years. The feature is the first showing of the new big six.

Back farther from the entrance, and separated from Buick by massive pillars, yet in the center of the Studebaker exhibit, is the "\$36,000 Gold Car." The metal portions of the wheels, headlights, steering posts, radiator, windshield and top, as well as the lines which set off the body, are of gold. The chassis and body are painted white and the victoria top is of enameled white cowhide. This gold car is the successor to the gold chassis of last year.

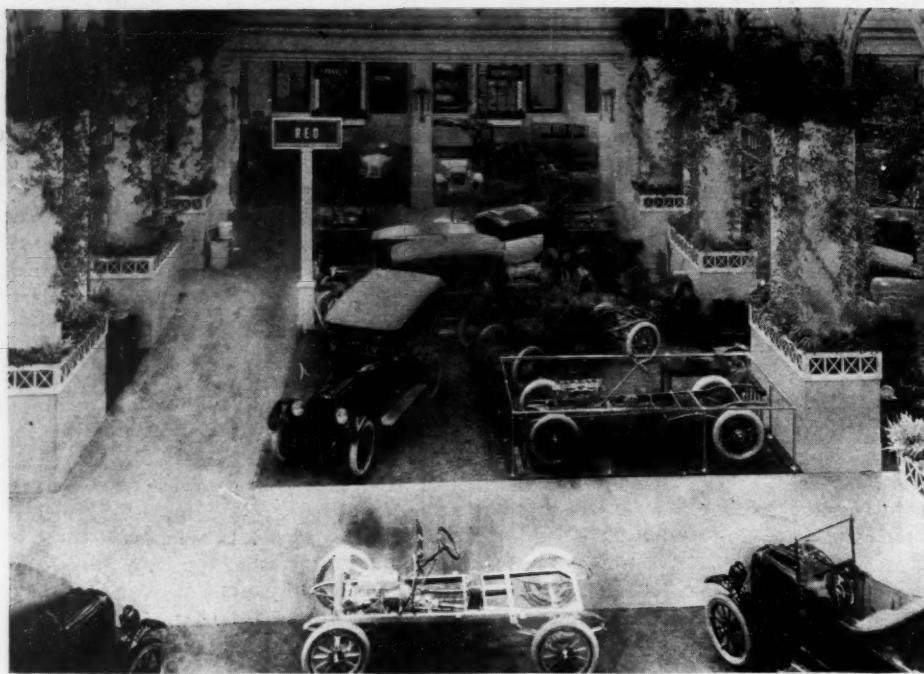
The fact that the accessories had to give up space to the motor cars this year, and that the motor car exhibits require considerably more floor space than does the average accessory, has resulted in a reduction in the total number of exhibitors. Last year this total was 391; this year it has been reduced to 323. The motor car exhibits, however, are over 10 per cent greater, ninety-five different manufacturers exhibiting cars this week, as against eighty-four a year ago. Accessory exhibitors, on the other hand, are fewer by nearly 100 than they were last year; they total 227. There is one exhibit which combines the feature of motor car and motorcycle in the Militaire.

Of the 272 complete gasoline cars, the sixes have increased from 116 to 125, eights from thirty to thirty-nine, and twelves from nine to fourteen; the fours have held their own at eighty-nine.

Summarizing the bodies, touring cars, of course, are very much in the majority, having 128. This is an increase of eleven over last year; roadsters have fallen off,



Main entrance to Grand Central Palace with first position at the right held by Overland and first at the left by Buick. The choice show spaces are along this center aisle



General view in center court, showing Reo in foreground

there being sixty-seven—eight less than last year. Among the inclosed bodies the town cars show the greatest increase—from five in 1916 to twelve.

The four-passenger roadster has the greatest following among the smaller capacity models. There are thirty-two of

these, twelve three-passenger roadsters and fifteen two-passenger roadsters.

The show this year is remarkable in that nearly one-fifth of the cars displayed are vehicles which have never before made their bow to the New York public at an annual show.

Of the ninety-six car exhibits, nineteen are new makes, either just announced or produced since the exhibition of last year. Some of these, such as the Hal, Jordan, Sun, Liberty, Bour-Davis and Elgin, have been on the market for some time, while others, such as the Harroun, Columbia, Majestic, Kent, American, Emerson, Ben Hur, Drexel, Bateman, Dey electric and Doble, are making their debut at this year's show.

Among these new cars there are several which are unusual from a constructive standpoint, although it must be made plain that there are few freaks on exhibition this year. Perhaps the car that is creating the most interest and comment at the exhibition from an engineering standpoint is the new Doble steamer. This is the only steam car on display. It has, in a great measure, eliminated the disadvantages which in earlier days have been attributed to steam vehicles and at the same time has a number of advantages which are inherent in steam propulsion as compared with internal combustion motors.

The Dey is a passenger electric featured by being unusually light and simple, so far as its power and transmission elements are concerned, having the motor as an integral part of the rear axle. The axle conception is that of Charles E. Steinmetz, one of the greatest authorities on electricity of the General Electric. The car was built by the



This is a general view of the main floor of the Grand Central Palace

Ward Electric Vehicle Co. and is supposed to be the low-priced electric that should be the Ford of its class.

There is at least one car which approaches freakishness in design; at least it is unusual. One is the Bateman, distinguished by front-wheel drive, power and steering being through the front wheels alone. Whether or not the front drive plan of applying power to the wheels is coming into vogue remains to be seen. At least two cars will be seen in 1917 that incorporate this style of drive. The makers of this type of drive claim many advantages for power transmission in this way.

Five Electric Makers Show

There are five manufacturers of electrics, Ohio, Anderson, Baker-Rauch & Lang, Milburn and Dey. The cars are all grouped on the second floor as in former years.

The combination of electric transmission of power in the gasoline engine is represented in two makes. These are Owen Magnetic, with which we have become familiar. The other is McFarlan, in which the Vesta centrifugal electric clutch is incorporated as a special feature on order. This clutch, the product of the Vesta Electric Co., Chicago, was described in these pages a year ago. It is sufficient to say that at car speeds of under 20 m.p.h. the speed reduction is obtained through magnetic drag between two parts of an electric magnetic clutch, the current generated by this drag being utilized for ignition, starting and lighting. There is no mechanical connection between engine and driving wheel at low speeds, but as the car speed approaches 20 m.p.h. centrifugal force causes carbon brushes to press more and more firmly against an internal commutator so proportioned that at



Center court, showing Studebaker gold car in foreground

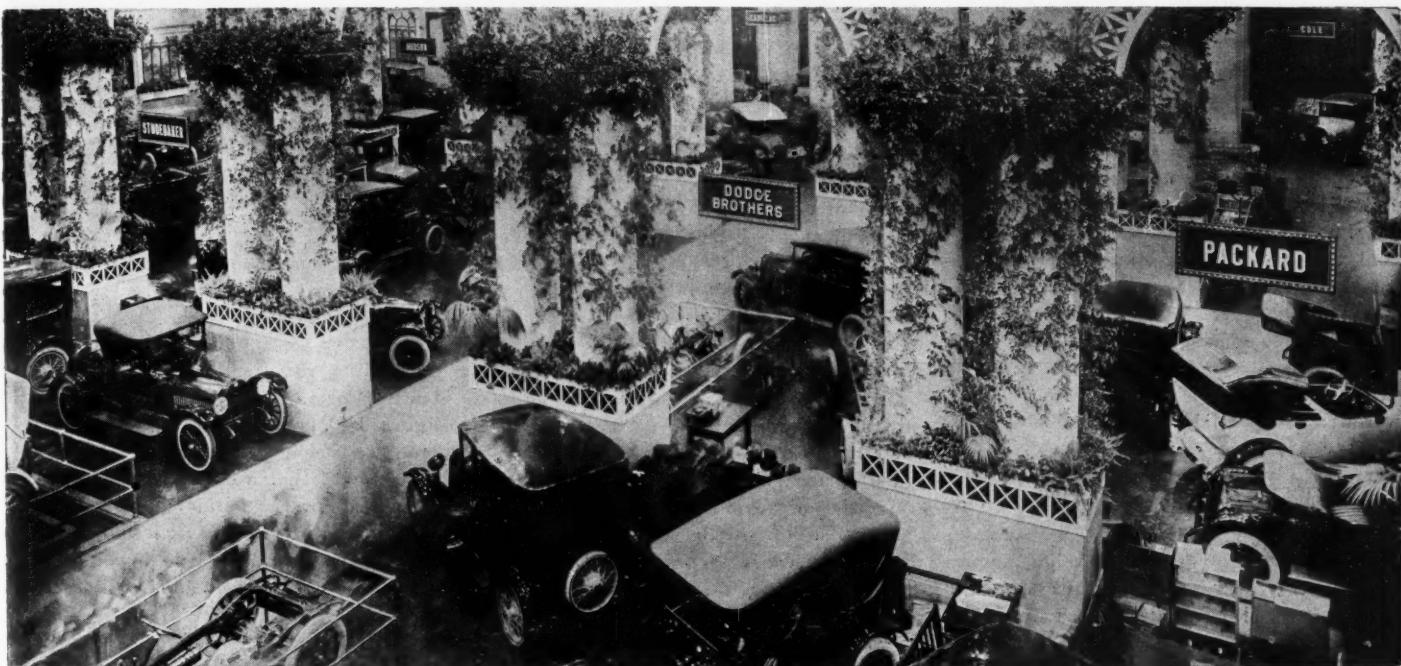
approximately normal car speeds the pressure is sufficient to carry both driving and driven members as a unit and there is no slipping action.

Another engineering development of the year represented in force at the palace is the sixteen-valve motor, featured as stock equipment on the Stutz, and the new Drexel. To this is added White at the Salon show. It is brought out partially as an answer to the multiple-cylinder idea, the greater engine speed and great thermal efficiency obtainable with double the ordinary number of valves giving many of the advantages which are claimed for the

multiple-cylinder V-type power plant. The Stutz motor is a center of interest.

A view of the externals of the cars on display brings out some definite movements in body design. First: The four-passenger roadster, temporarily, has the call. It is in every space. Among the vehicles of smaller carrying capacity the four-passenger roadster is the development of the three-passenger clover-leaf idea of last year's show. The three-passenger clover-leaf, as a roadster, has been superseded by the four-passenger close-coupled body usually having only two doors, these

(Continued on page 14)



Another general view of the main floor of the Grand Central Palace, New York

Salon's Fashion Revue



This view gives a good conception of one end of the Salon exhibit at the Hotel Astor

NEW YORK, Jan. 6.—Evidences of a return to first principles in vehicle body designing, reminiscent of the days of the coach-and-four, are the paramount features of the display of the higher-grade body-builder's art as exhibited in the Automobile Salon this week at the Hotel Astor. Originally limited to motor cars of European design and manufacture, the Salon has become the one representative display of the most fashionable in style and the best in workmanship in chassis construction and coach building. This is the thirteenth consecutive year that the Salon has been held in New York, and in the admission of some of the products of American makers, which came about through the partial cessation of supply of European cars on account of the war, the same high standards set when the exhibition was exclusively an importer's one have been maintained.

The Salon has lost its foreign flavor. Of the fifteen distinct makes of cars shown, only three hail from across the water. These are the Isotta-Fraschini, Lancia and Rolls-Royce. The American cars are White, Locomobile, Crane-Sim-

plex, Fiat, Daniels, Brewsters, Singer, Roamer, Novara, Phianna, Murray and Biddle. Of these the last four are new.

Unlike the Grand Central Palace, the grand ballroom of the Hotel Astor requires little or no special decoration. Smilax and wreaths were used very sparingly to relieve the heavy gold finish of the hall. Floors are covered with rugs; pipe-organ music fills the huge room throughout the day and evening; marble statues fill many artistic corners of the ballroom; in fact, no better place could be found to create a favorable mental approach for fashionable bodies.

Subdued Color Scheme

If there is any one feature of the cars at the Salon this year as a whole, it is that they are quieter. They are more subdued in design and in color. Shades are softer; color combinations, less striking. The finish of the body itself as a rule is softer. The cars are more unobtrusive yet they have that indefinable atmosphere of individuality.

The satin finish is not a new thing. Yet it has taken hold more strongly than before. This finish is flat but bright enough

to reflect. It is more durable than brightly varnished surfaces; scratches affect it little; and dust is almost invisible on it. It is safe to prophesy that this finish will not long be solely a custom body feature. The colors might be classed as tame colors, all featured by a complete lack of striping on doors, wheels or other parts. Striping is not in vogue for 1917 custom jobs.

For closed car work the straight line idea is stronger than ever before. The rear corners of limousines and town cars have straight edges where the sides join the back or the top rather than the heavy curves of a year ago. This is a distinctive feature for several designers. The straight line idea lends itself to the old carriage brougham conception of fifty years ago, a sure proof that we operate in cycles; and though motor car builders laughed at carriage art a few years ago they are now embracing it and feel happy in adding one more cycle to fashion's dictates in the art.

Custom bodies—those which are designed to meet the desires of an individual purchaser, as distinguished from stock

bodies designed to be turned out in quantities to meet the desires of a class of purchaser—have become much more of a factor in the American motor car market within the last few years. Not long ago the custom body carried with it the idea of a foreign chassis. Such is not the case at present, for several car builders and many of the more aggressive dealers in the larger cities have special custom body departments in which the individual tastes of the purchaser may be met in the design and finish of the superstructure.

So far as America is concerned fashions in coachwork are set by such masters of custom-body building as Brewster, Holbrook, Rubay, Healy, Locke and others. Custom bodies are the work of artists rather than of artisans.

Logically enough, American motor car builders as a whole take the custom bodies to a certain extent as their models in laying out their stock production. Witness, for instance, the double-cowl effect, the divided front seats, the stream-line body and the slanting windshield—all of which made their debut as features of custom-built bodies.

Seemingly stock body makers have followed so closely on the heels of the custom body builders, in external appearance at least, that the latter have been put to it to get new designs along the lines they have been following for the last several years. They apparently have found it necessary to take another tack this season. This may not be wholly for the sake of having something different from the present trend of stock bodies, but certainly this consideration was a factor.

Old-Time Coach Idea Prevails

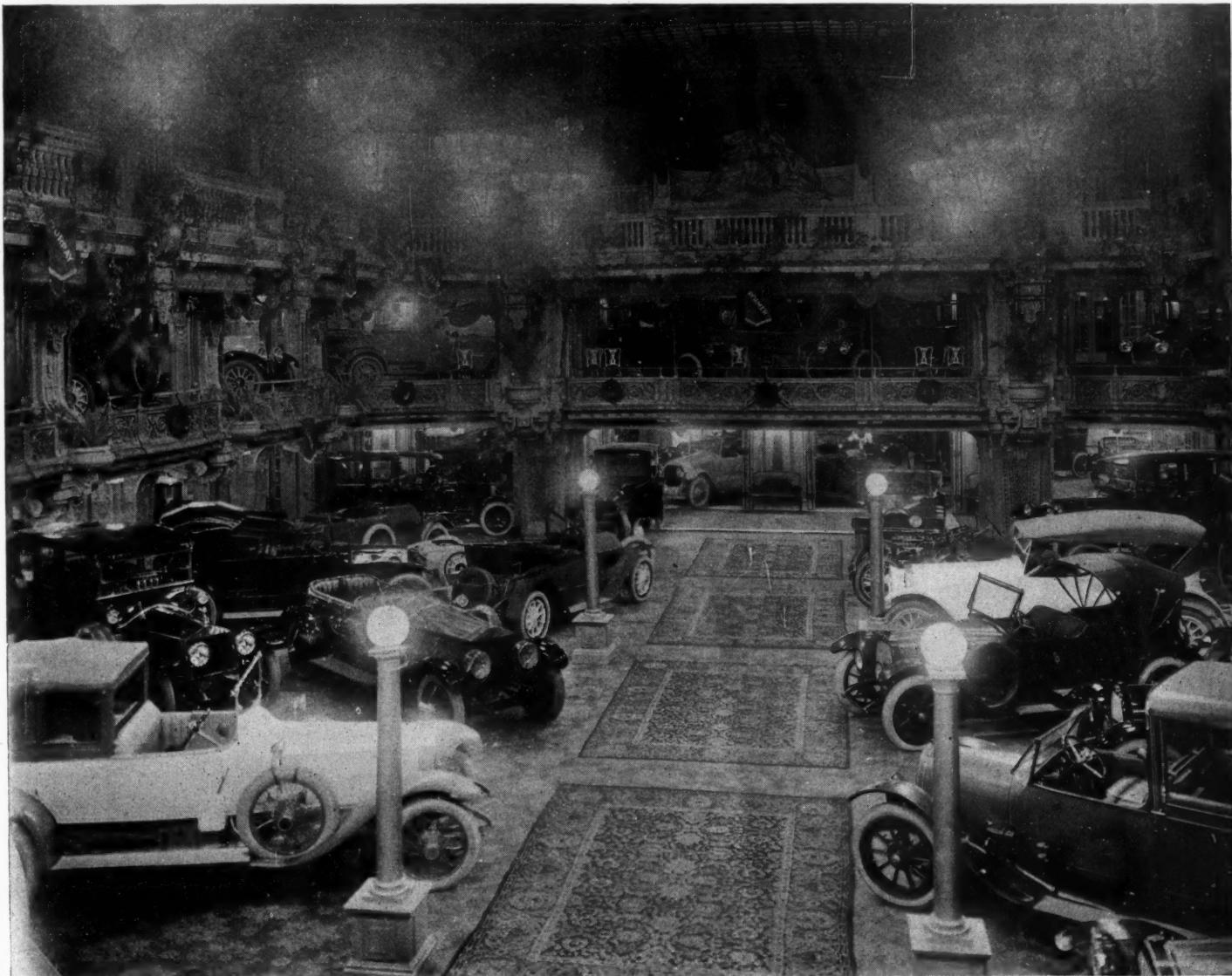
Thus, the most striking new movement as seen at the Salon is the old-time coach idea, particularly as applied to the broughams and town cars. To what extent this has been carried out is indicated by the fact that practically every one of the car and body exhibitors at the Astor has at least one brougham or town car in which the former soft curves have been superseded by sharp corners and angles; in which the fenders are narrow leather ones; in which the running board has dwindled to a very short one or perhaps even to simply a step. In one Locomobile body this step is protected from mud by a cover

which opens when the door is opened.

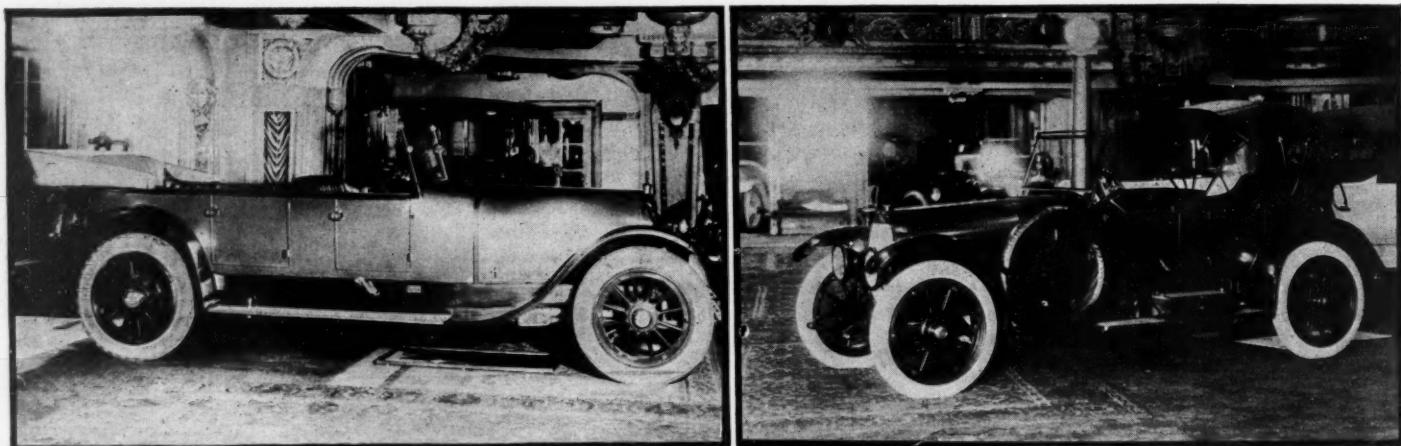
Limousines and sedans also show this tendency toward the ancient coach, though not to the extent that the broughams and town cars do.

There are many cars, generally town ears, with leather fenders. This is not new. Nearly eight years ago Renault endeavored to popularize leather fenders but failed. Body designers generally agree that the design of the custom-made motor car body resembles fashions for men and women, which change in cycles, and that the leather fender is not robust enough for the strenuous service of a motor car, though it was serviceable for horse vehicles years ago. At present the leather fender is attracting a little attention in that many body designers are endeavoring to revert to the lines of design in the brougham of twenty-five years ago.

The same aim toward exclusiveness is found in the variety of running boards on city cars and on some touring ears. Last year only one ear in the Salon was without running boards, but this year more than half a dozen have none. Leaving off the running board on touring cars is not



Here the Salon show at the Astor appears in the direction opposite that shown on preceding page



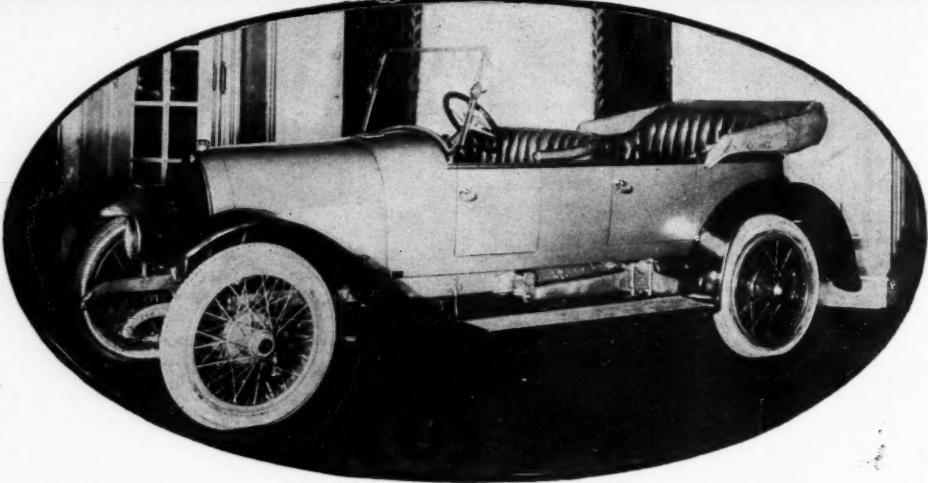
Upper right shows the Simplex with heading; left, the Brewster with Victoria top, and in oval, the Phianna

looked upon favorably, and the consensus is that it will never gain much headway. The running board is an essential as a protector of the body. Where it is left off as on the Lancia touring car, a long semi-cylindrical underpan has to be fitted, extending practically from axle to axle. This underpan looks a part of the car body and is curved to form a continuation of the upper body. It is not an easy job to take for stock purposes and has to be mounted to be proof against rattling. It renders certain grease cups quite inaccessible.

For town cars it is possible to leave the running board off with excellent results, as shown in the Daniels' design and also on a Lancia and on one or two other makes. There are adequate leather fenders for the front and rear wheels and adequate steps for the doors.

Not Much Change in Touring Cars

According to Leon Rubay, who has had an extensive experience in body designing in New York for nearly ten years and who is now head of a custom-body building company in Cleveland, which bears his name, touring cars have not been altered materially since a year ago. Bodies are practically as they were then. It has not been possible to mount them any lower on the chassis. In some cases the body sides have been lowered a couple of inches, but nothing in the nature of basic changes has been attempted. According to Mr. Rubay the rear seat windshield is one of the great essentials in touring cars. There are many designs of these windshields that have been in use for five or six years, but these are not suited for the separate front seats. Designers have before them the job of designing a satisfactory rear-seat shield suited for the new bodies. It is nearly the last word in selfishness for the car owner to sit with his man friend or neighbor in the front seat well protected against winds by the windshield and to let his wife and daughters take all the cold blasts without a moiety of protection in the back seat.



A year ago, and in fact two years ago, a flurry of excitement was provoked by body designs in which the top folded into a compartment in the side of the body and when down was entirely concealed. This show has none of these. The design is not in favor of them. It is possible to design a runabout for such a top but to design a touring car body with this top and yet maintain good touring car lines is much more difficult. There are certain objections which custom-body designers urge against the design, one being that the top is apt to mildew if folded when at all damp and another that the department develops into a dirt receptacle.

Furnishing compartments in the body to carry the tires has practically been given up by custom-body designers, according to Mr. Rubay. The tire is too large to permit of such compartments. When you endeavor to hide the tire within the touring car you interfere with seat space. Fashion favors carrying the tires or extra wheels on the rear, except in those designs where one extra wheel or tire can be carried on each side of the body without interfering with doors. Sentiment favors the rear.

Narrower rear seats are gaining in popularity in custom-made bodies, and this may show in stock jobs three or four years hence. It is possible to get better body lines with a rear seat for two persons. The rear seat for three adults calls for a heavy

body swell, which generally interferes with the best lines.

Within the interior modernity is in evidence in every corner. The very latest in fittings are the rule. Vanity cases, containing complete outfits for the fair occupants' beautification en route, are matched by a well fitted smoking set, containing receptacles for matches, ashes and cigarettes. In some instances, the match holder is superseded by an automatic electric cigar lighter. The vanity cases frequently are fitted with a clock. These fittings usually are of silver and cut glass—in any event they match the scheme of interior decoration of the car.

Pullman Corner Light Superseded

The pullman type of disappearing corner light to some extent has given way to miniature wall brackets of silver or gold. The dictaphone type of intercommunicating telephone between passengers and chauffeur is the rule. Automatic lights, which illuminate the step when the door is opened, are more in evidence than formerly.

Of the open bodies the most diversity is shown in the roadsters and the nautical and aeronautical ideas are dominant. There are several of this class of pronounced lines, and these are the only ones which approach the freakish in idea or treatment. The new Novara is the most noticeable, and when it is said that this is the product of the Herreshoffs of Bristol,

R. I., yacht builders, the unusual ideas incorporated in its design are accounted for. The aim of the builder was to produce a car having low weight and rapid acceleration, and the elimination of wind resistance by applying the principles of streamlining as in speed yachts gives it a decidedly distinctive appearance.

Instead of building the frame and fitting the body to it, the Novara has its frame built to fit the body. The body itself is made just as a boat is made. The type of oak frame ribs used in boat building is double-planked with cedar and mahogany for exterior finish. It is a very sporty looking two-passenger without running boards and with fenders detachable for speed work.

Dolphin White Roadster

Another distinctive roadster is the White Dolphin roadster. This also has a nautical flavor. If it were a boat it would have what is called a transom stern, and there is a wide deck around the body. The three seats in cloverleaf seem molded into the body. It is finished in two-tone gray with satin finish and has a narrow close fitting top. There is a pointed windshield with individually adjustable and overlapping glasses.

A Locomobile four-passenger by Rubay has the rear seats individual with separate arm rests. This model has a dark green satin finish with an extension victoria top and full headlining. The body combines the vestibule and the double cowl effect.

On a Lancia chassis is a Hydroplane roadster, so-called. Its lines slope smartly to the rear and the body covering is carried around under the frame, as there is no running board. It is finished in bright maroon; it has neither windshield nor top, and the front fenders flare widely while the rear hug the wheels. When increased capacity is desired, there is an additional seat for two. This disappears into the deck. Another Lancia roadster has similar design, but the fenders are flat and have abrupt angles.

Brewster's Club roadster is particularly attractive. It is finished in Brewster claret and English vermillion, with claret broadcloth upholstery. Its top hides completely behind the front seat, and there is a disappearing rear seat for an additional two.

Possibly the most representative exhibition of styles is that of the White company. All the bodies are by the Rubay Co., Cleveland. The three-passenger cloverleaf coupe is one of the most attractive. There are two, one in beaver brown and black and another in torpedo gray.

Locomobile's showing is extensive, as its bodies, though designed in the Locomobile custom body department, are constructed by a number of body builders such as Locke, Rubay, Brewster, Holbrook and Healy. A Locke body is a town car called the D'Orsay brougham. It is in the latest approved coach style. Locomobile also has

a sporting cabriolet finished in canary and black, in which the top is collapsible. A novel idea is found in the small side lights set in the glass of the lower corners of the windshield.

A Brewster creation which is distinctly out of the ordinary is a five-passenger phaeton satin-finished in forest green with forest brown running gear and brown broadcloth upholstery. It has a new type of victoria top in which the mahogany bows are exposed and the sides are uncovered. All the Brewster designs are furnished with windshields, the upper portion of which overlaps the lower about 4 in.

Singer has a robins-egg blue touring car with natural pigskin upholstery and top. It has no running board. There is also a seven-passenger in a dark-green satin finish.

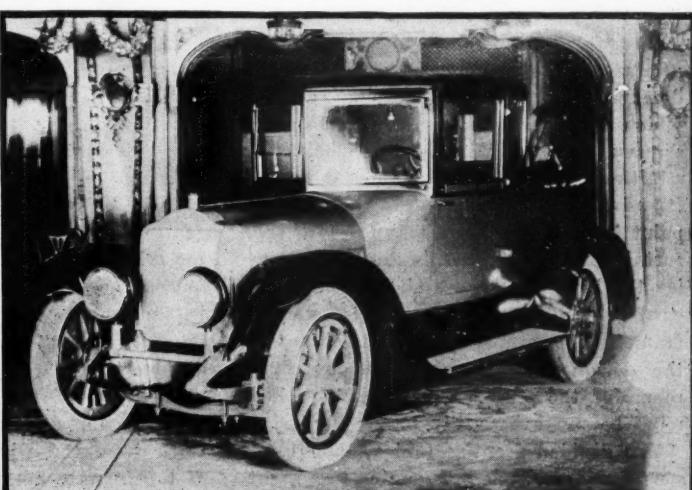
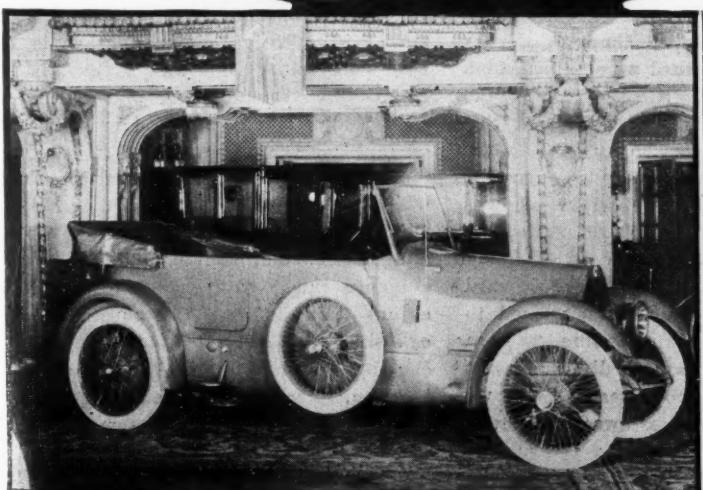
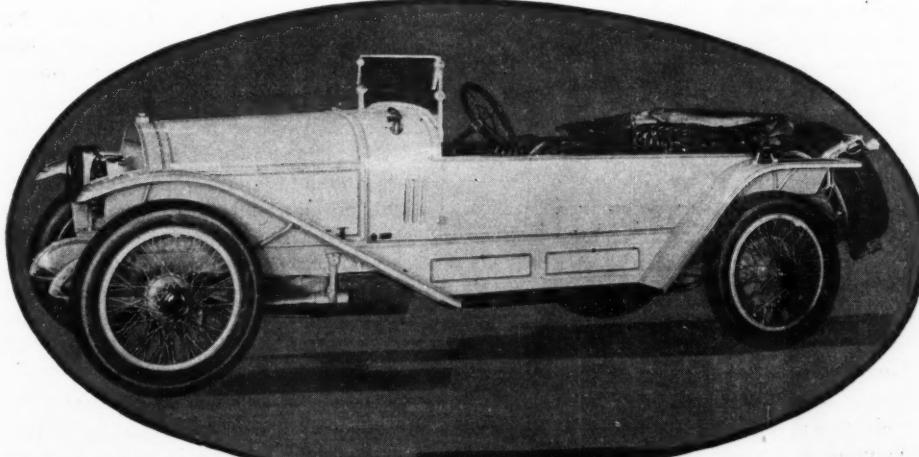
Rolls-Royce is featured by a white-and-slate town car and nickel finish and a sporting four-passenger roadster bright-finished in aluminum. This latter is very brilliant, as there is no paintwork on the body proper—just polished aluminum. The fenders, etc., are black satin finish, and furnish a striking contrast. One of the features of the Lancia exhibit is a polished chassis whose cooling fan is notable in that it is a two-blade airplane propeller type of laminated wood.

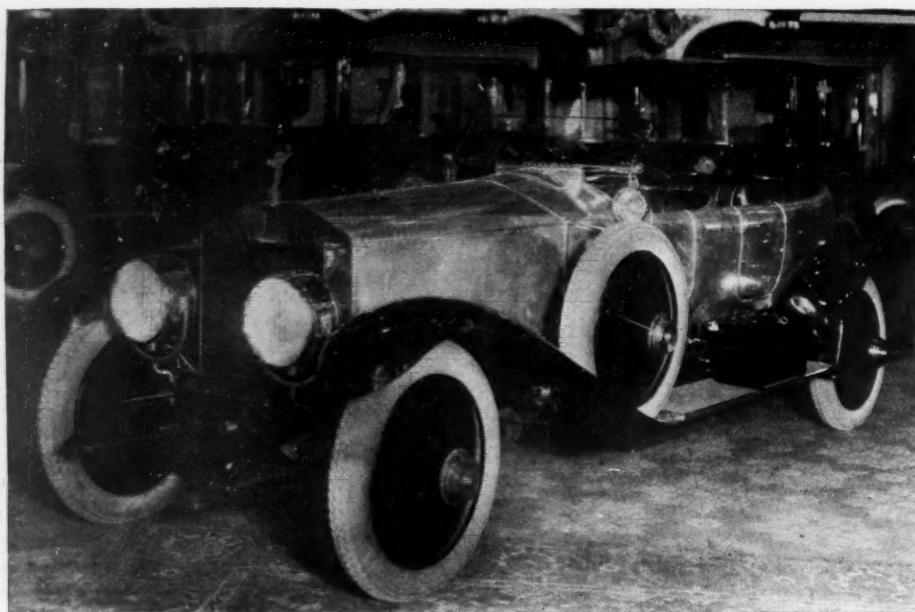
Crane-Simplex Have Several Bodies

The Crane-Simplex cars are shown in several bodies, the most noticeably distinctive of which is a touring car finished in satin gun-metal. There is a trouble lamp under the hood for engine adjustments. A red-and-black berline also is especially attractive.

As to what may be accomplished in partially individualizing stock models, the Daniels display is enlightening. One touring car is finished all in white with leather victoria top, wire wheels, special broadcloth in the tonneau and a special disappearing windshield which drops into the back of the front seat. Even the standards fold into the seat.

In oval is the Locomobile; lower left the Lancia; and lower right the White





Rolls-Royce has an aluminum body and the wheels have a disk covering the spokes

The new Phianna, distinguished by its exceptionally long and heavy cantilever spring, covered with leather and exposed a la Rolls-Royce, is supplied in one instance with a Holbrook body in the form of a town car. This has an extra seat which is within the inclosed portion and which vanishes into the front panel.

Fiat's feature is a cream-and-black brougham with the sharp squared corners of the coach style. The Murray, whose hood and radiator lines are reminiscent of Rolls-Royce, has a particularly attractive green-and-black brougham finished in green Bedford cord. It is of the square coach type. Roamer, also Rolls-Royce in cast,

has, as one of its features, a sedan in maroon finished in gray whip. The front seats are individual, very low and chair-like, and the back of the right one folds down to permit passage from front to rear. A light gray tourist for four or six passengers has lockers on either side of the tonneau, which carry complete luncheon kits.

Biddle has a very sporty five-passenger tourist with victoria top and finished in dark green. The motor exhausts through polished brass flexible tubing outside the hood. The fenders are separate from the running board, and there is none where the spare wheels are carried. The headlamps are brass.

Gotham Opens Circuit

(Continued from page 9)

in front, with a passageway between the forward seats to the rather restricted tonneauette in the rear. In some instances, as in the Briscoe, the forward seats are not divided normally but the back of the forward seats divides upon occasion to admit rear seat passengers.

The four-passenger roadster, as it is produced, has been developed to meet the demand for a speedy appearing roadster, which does not look empty with two passengers and yet which has capacity for additional passengers when such is needed. Its advantage is that from a riding standpoint it probably is easier and more comfortably suspended than is the small capacity touring car, because all passengers are carried well toward the center of the frame. The problem in connection with the design is to provide sufficient knee room for the rear seat occupants without requiring an awkwardly long cockpit.

The divided front-seat idea, though not a new movement, is represented to a great-

er extent than previously. Its appeal comes from the fact that, theoretically at least, there is free inter-communication between front and rear-seat passengers, a feature appreciated in the family type of inclosed car, such as the sedan and convertible types.

In the touring bodies there is a very strong movement toward a new line which had its inception in a very few of the cars last year but which is common this year. This is the double curve, or wave line top of the sides. A year ago the strictly boat line of the sides, which was featured by a single downward curve from the windshield to the center of the body and a continuation of this curve upward to the back of the rear seats, seemed to have the call. This year this line has been divided into two curves, the dividing point being back of the front seat. Thus we have the top of the sides sweeping downward from the windshield to the middle of the forward compartment, rising at the

back of the front seat and down and up again at the tonneau, cutting the period of vibration in two, as it were. This effect has been enhanced, particularly where the divided-seat idea is incorporated, by the adoption of methods through which the double cowl effect is obtained with a vestibule body. Quite frequently this is accompanied by a paneling of the rear portion of the front seat so that, except for somewhat less space, the effect is as pronounced in the divided front seat job as it is where the forward seat is continuous.

Interior Woodwork Is Better

There has been a very noticeable advancement in the interior woodwork, this taking the form of higher-grade workmanship in the paneling and simultaneously better design and arrangement of compartments, either at the side of the tonneau or utilizing the space at the rear of the front seat. Some particularly good examples of this are the Mercer, the Paige two- and four-roadster and the Majestic. The latter is particularly worthy as the back of the front seat comprises a completely equipped motor restaurant. The main portion of the mahogany back of the forward seat rises horizontally and forms a table large enough for serving four people. On either side of this are lockers, one of which contains vacuum bottles and the other air tight receptacles for food.

Colors Are More Brilliant

Colors, if anything, are more brilliant than previously. This applies as much to the stock models as to the special show jobs. Delicate blues, lavenders and similar hues, which are offered as color options with stock bodies, are greatly in evidence. The special show bodies this year run mostly to whites and in some instances white-and-gold effects. An example of the way in which the idea of elegance has been carried out in a special show job is the Briscoe convertible sedan. The exterior of this is a canary yellow and black and the whole interior is a very rich tapestry, this including the inside of the top, sides and upholstery.

Some of the older manufacturers have new models on exhibition which are largely of interest because it is the first time they have appeared. One of these is the new Willys Knight-eight, another is the new six-cylinder Olds and a third is the Buick's latest and larger addition to its six-cylinder model, the Enger four and Scripps-Booth four.

The educational features of the show, which as ever have consisted of cut-away motors, cut-away chassis, operating motors and chassis, and similar exhibits, are in evidence this year, perhaps to a greater extent than before. The most complete exhibit of this character is the Paige split chassis. One of the new Paige chassis has been split from end to end along its medium line just as though some one had taken a brand new chassis and pushed it into a buzz-saw. From the radiator in the

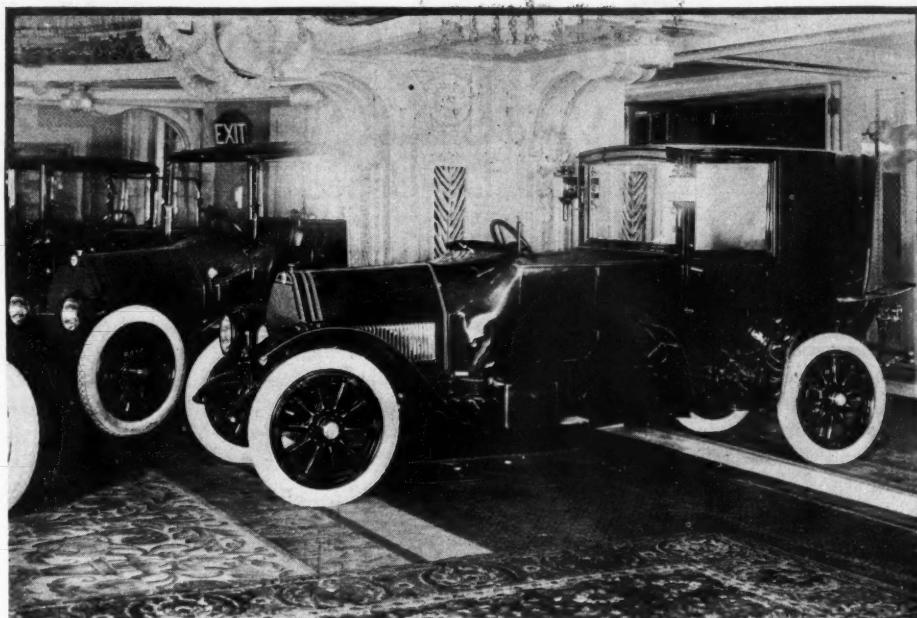
front to the fuel tank in the rear, through motor, transmission and frame the whole chassis has been cut and the interested crowd testifies to its value as an educational feature.

There are many other highly polished, highly finished chassis, some of them electrically illuminated with glass casings, some of normal construction and electrically operated and others cut out in portions to show special features. The Marmon's special body structure is very well illustrated by a section of the aluminum body showing the process of construction and upholstery. There are fewer motors as exhibited. Ordinarily their function this year is as a part of the car or chassis.

The Crow-Elkhart has an etched gun metal chassis finished in a waved design like that of a high class gun barrel.

Inter-State has a gilded chassis, which contrasts with the polished types. The Premier exhibit has a polished chassis, showing particularly the new aluminum motor and the application of the magnetic gearshift.

One of the features worthy of favorable comment is the fact that we have not with us this week so many lecturers as previously. Quite frequently the attempts of these exhibit lectures to explain the inner workings of some complicated mechanical feature of the car in language understandable by his open-mouthed audience of untechnical visitors were more interesting than educational. Nevertheless these lecturers have had their place in spreading the knowledge of the motor car and its construction, and while their passing has taken away one of the romantic features of the annual exhibitions the fact that they are considered no longer necessary is a worthy comment on the general motor education of the public.



The Lancia town car is shown in the foreground

Probably the most striking figure at the show is the armed and armored knight in the Moline-Knight booth. He was accoutered in real sixteenth century armor and an object of wonder to the catalog-conveying small boys that appeared in numbers among the first nighters; at the same time, his figure will be carried away in the minds of every visitor who saw him.

Accessory exhibits are unusually rich in new features. There is a new wire wheel, the Kelley, and a new vacuum fuel feed, the feature of the Sparks-Withington exhibit. The Erickson Mfg. Co. has added a battery system to its Berlin magnetos. The Presto air brake makes its first public appearance at a show. As usual there are many interesting and attrac-

tively arranged displays. Some of this include the spark plug exhibition; the Bendix Gold plugs, the Red Head porcelain construction, Giant V-Ray and the A-C plugs attracting attention. Mosler has overgrown plugs mounted as cannons.

The lady in white that demonstrated a Stewart-Warner product last year now is the feature of the Stewart vacuum fuel feed display. K-W, Splitdorf and Bosch are demonstrating twelve-cylinder magnetos. The E. A. Laboratories have a new electric clock. There are four devices for introducing water vapor into the intake manifold, one of which is the Gemco, which takes water from the cooling system and heats it from the exhaust. Brunswick-Balke-Collender is showing a development of the Brown punctureless tube.

How New York Show Records Compare

Garden and Palace					
	1913	1914	1915	1916	1917
Total Exhibitors	424	349	317	391	323
Car Exhibitors.....	89	78	80	84	95
Accessory Exhibitors.....	320	259	223	306	227
Motorcycle Exhibitors.....	15	12	14	1	1
Grand Total (Cars and Chassis Together).					
Four Cylinder Cars.....	202	162	126	116	120
Six Cylinder Cars.....	112	116	134	125	143
Eight Cylinder Cars.....	0	0	8	41	47
Twelve Cylinder Cars.....	0	0	0	13	15
Electric Cars.....	10	17	15	17	13
Steamers	0	0	0	0	2
Total	324	295	283	322	340
Gasoline Cars.					
Two-cylinder	0	2	0	0	0
Four-cylinder	169	132	96	89	89
Four-cylinder (piston valve).....	0	1	0	0	0
Four-cylinder (sleeve valve).....	6	8	10	5	5
Six-cylinder	86	98	105	16	125
Six-cylinder (sleeve valve).....	4	2	1	0	0
Six-cylinder (crescent valve).....	0	0	2	0	0
Six-cylinder (rotary valve).....	1	1	0	0	0
Eight-cylinder	0	0	7	30	39
Eight-cylinder (sleeve valve).....	0	0	0	2	0
Twelve-cylinder.....	0	0	0	9	14
Total Gasoline Passenger Cars.	266	264	220	251	272
Touring Cars.....	162	143	124	117	128
Roadster	49	50	48	75	67
Limousine	23	15	18	11	16
Berline	8	6	2	1	0
Coupe	19*	17	7	6	6

Garden and Palace					
	1913	1914	1915	1916	1917
Phaeton	1	2	1	0	0
Landaulet	0	1	1	3	3
Raceabout	2	2	3	2	0
Sedan	0	14	8**	26***	10
Cabriolet	0	5	4	5	3
Brougham Touring Cars.....	0	0	4	5	12
Springfield Type Bodies.....	0	0	0	0	14
Detachable Tops.....	0	0	0	0	13
Total	266	265	221	251	272
Chassis.					
Four-cylinder	27	21	20	19	26
Four-cylinder (sleeve valve).....	0	0	0	3	0
Six-cylinder	21	15	26	19	18
Eight-cylinder	0	0	1	8	18
Eight-cylinder (sleeve valve).....	0	0	0	1	2
Twelve-cylinder	0	0	0	4	1
Electric	1	1	0	2	1
Total	48	37	51	56	54
Electric.					
Coupe	7	7	1	11	8
Cabriolet	0	0	1	1	0
Roadster	3	1	3	1	1
Brougham	0	13	9	4	3
Town Car	0	1	0	0	1
Limousine	0	0	1	0	0
Total	10	17	15	17	13

*Includes Cabriolets.
**Includes two Touring Models with Detachable Tops.
***Includes fifteen Touring Models with Detachable Tops.

Cardinal Colors Well Mixed

Vivid Shades, Moths of a Year Ago, Now Well-Developed Throughout Car Field

IT is questionable if at any previous New York show there has been such a galaxy of bright-colored cars as are seen this year. Heretofore we have expected a few of the leading manufacturers to have a show car in bright yellow, green, blue, white, or other combinations, but we have not looked for such jobs scattered all through the show and particularly with manufacturers

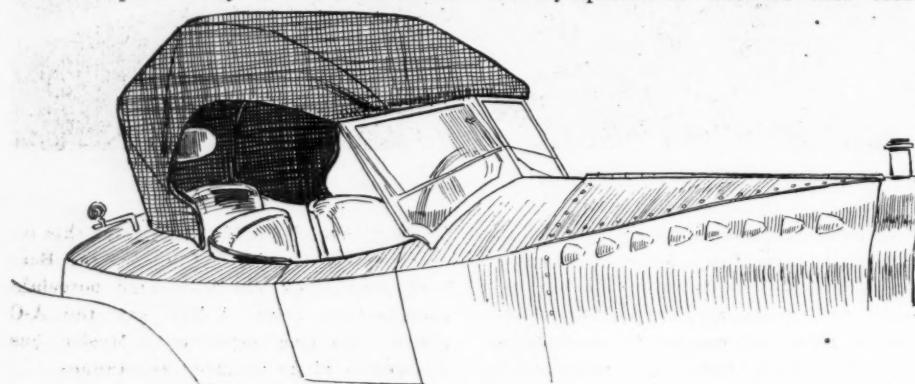
of low-priced cars. This year the show-body movement has spread on to every floor of the Grand Central Palace.

These show bodies are more rational than in former years. You do not see so many interiors finished in delicate pinks, blues, and whites, more looked for in the boudoir than in a motor car. This year there are lavishly-upholstered interiors with costly

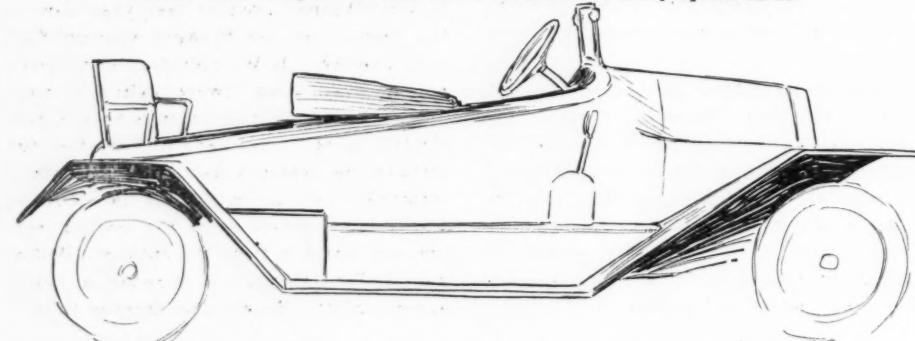
tapestries and silks, but they are more usable. It is true that nearly all of these show jobs are in colors that are not regularly listed as stocks and often several hundred dollars is added to the cost. Studebaker occupies the interest center with its gold and white car on which it is stated \$30,000 has been expended in precious metal. The car with victoria top is an art job. It is always surrounded with an admiring throng.

After studying all of the exhibits you are convinced that more thought has been expended on body designs than has been usual in former years, notwithstanding the pressure production has imposed on car makers. There are some really brilliant designs, bodies that stand out conspicuously in different respects over all others. These bodies show special thought. One maker has set about to look after personal comforts more than ever before. Another has aimed to accomplish certain ends, such as carrying the tires and top within the body. Another has endeavored to give the most comfortable seven-passenger job. Another has confined his efforts to the most practical four-passenger style. The work of another has been to develop the best Springfield type. So it is throughout the show, different makers excel in different departments.

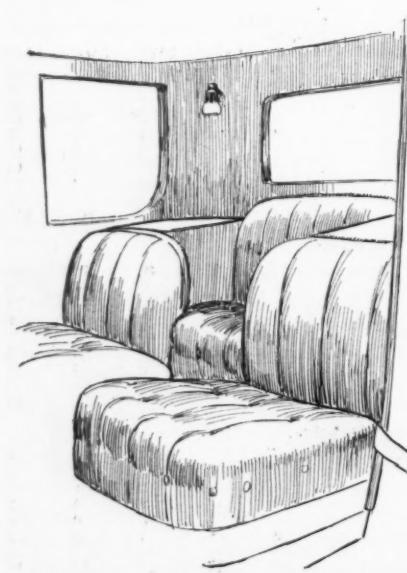
The preponderance of four-passenger runabouts, which are a development of the clover-leaf design of last year, is one of the dominating designs. You meet such a car in practically every exhibit. You do not see the three-passenger cloverleaf of a year ago, except in a coupe. It is now all four-passenger jobs with the front seat divided and an aisle between to reach the rear seat. The rear seat is generally wide enough for two passengers, but there is



In the White Dolphin the deck meets the sides in a sharp square corner



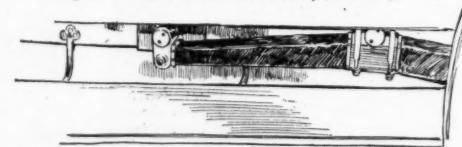
An exaggerated form of the low sloping rear is shown in this Lancia hydroplane roadster



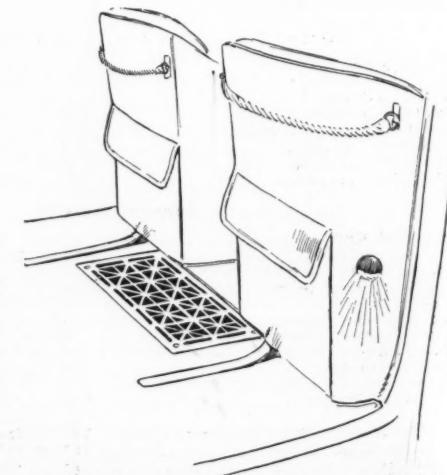
Comfort has been made a predominant feature in the White sedan



This town car is one of the hits of the show. It is very simple, with perfectly square corners and devoid of molding



The Phianna cantilever spring is covered with leather. There is a mud apron behind



A heater is installed in the Ben Hur open sedan

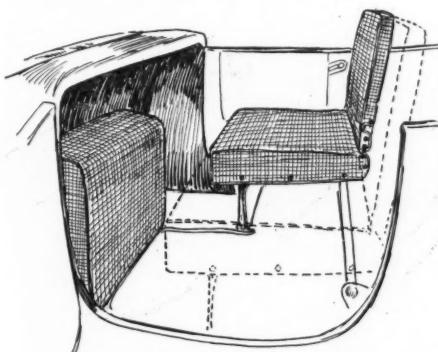
rarely enough knee room. The back of the seat is generally too low. These designs are good as emergency runabouts, but they cannot possibly take the place of a four-passenger touring car in which you would take a 500-mile trip with four people and necessary baggage. There is not room for a small hand grip, except in the aisle between the front seats. There is not space for carrying robes or rain coats. These designs are generally hopelessly lacking in baggage-carrying capacity. With three passengers in them there is sufficient room for a suitcase, a robe and extra clothing.

In the field under \$1,000, Saxon and Allen have two particularly roomy designs of four-passenger roadsters. There is more knee room than in many of the larger makes. Their design suggests that several manufacturers can, without increasing the wheelbase, secure more space for the rear passengers and provide accommodation for such necessities as extra coats, robes, etc.

Few Four-Passenger Touring Cars

The out-and-out four-passenger touring car is conspicuous by the few concerns exhibiting it. Mercer, National and Premier merit special mention as having attractive jobs in this division. The Premier might be classed as a close-coupled type as compared with Mercer and National. All three are commendable designs, and have good baggage capacity inside the body. In this respect National leads with a compartment in the back of the front seat in which one or two suitcases can be carried. Above this are two smaller compartments for veils, scarfs, gloves, guide books and other touring essentials. This body is a real effort towards making a touring car something more than a vehicle with seats for the passengers.

The Mercer might perhaps be classed as having one of the best touring body designs in the show, and one which has more imitators than perhaps any other. It represents that streamline design with a center cowl, but not having the top side lines of the body straight from the front cowl to the rear seat. Rather there is a suggestion of downward convave curve between the front cowl and the center cowl and also between the center cowl and the rear of the tonneau. This effect gives the center cowl the appearance of the crest of a wave.



Spacious folding seats of the Hupmobile, which when unfolded extend to the whole width of the car, affording room for three

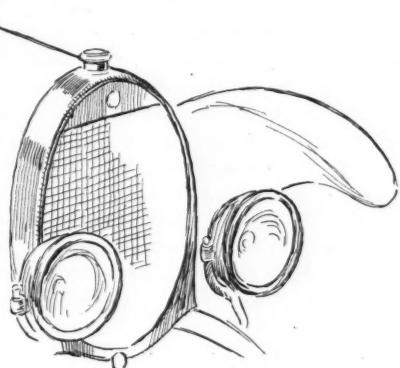
It might be permissible to designate this modification of streamline design as wave line, as opposed to straight line as exemplified in the National four-passenger. Go through the show from top to bottom and practically all touring cars fall into either of these classifications, namely, the straight-line top or the wave-line top.

Hupmobile merits particular recognition as having a seven-passenger job with two of the most comfortable auxiliary tonneau seats at the show. These seats are larger and wider than others. They are very comfortable and when both are opened up furnish practically a continuous seat from side to side which will accommodate three

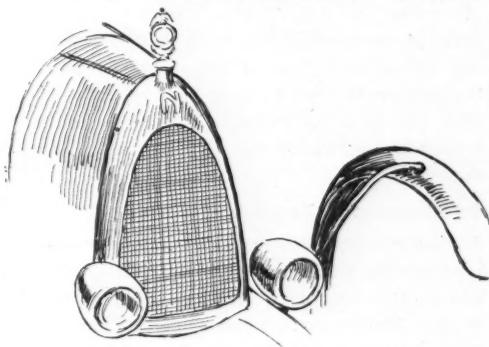
passengers. These seats fold under the center cowl where there is sufficient space back of the front seats to conceal them. The cowl affords adequate protection for them and no effort is made to conceal them with curtains.

In the five-passenger touring field the new Liberty is coming in for very general comments on its well-proportioned design from radiator to tonneau. Its design follows the Rolls-Royce school of straight-edge radiator and hood lines as compared with expanding curves so dominating this year. Body and hood proportions have been very well weighed in this job.

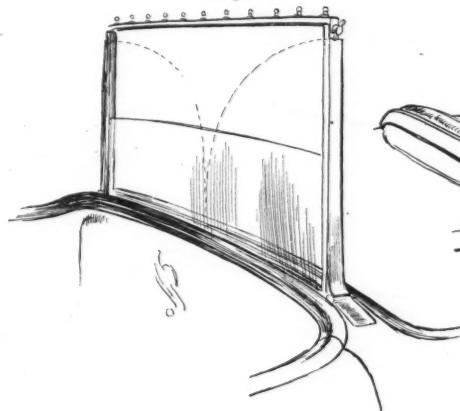
In the strictly two-passenger runabout



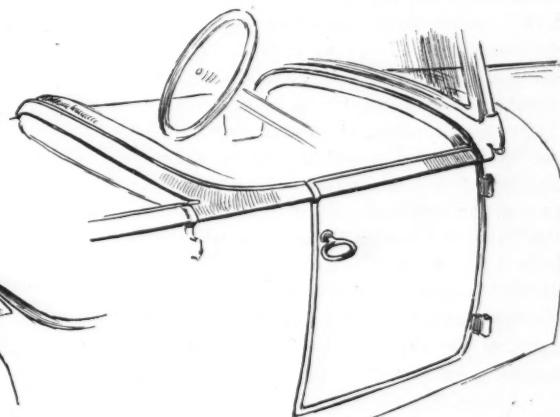
The radiator of the Brewster is oval in shape



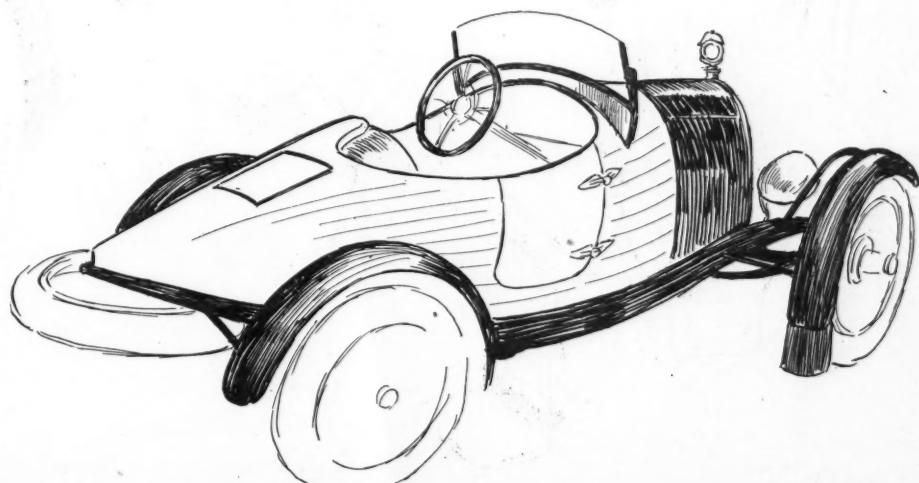
The Novara is almost in a class by itself with this type of radiator



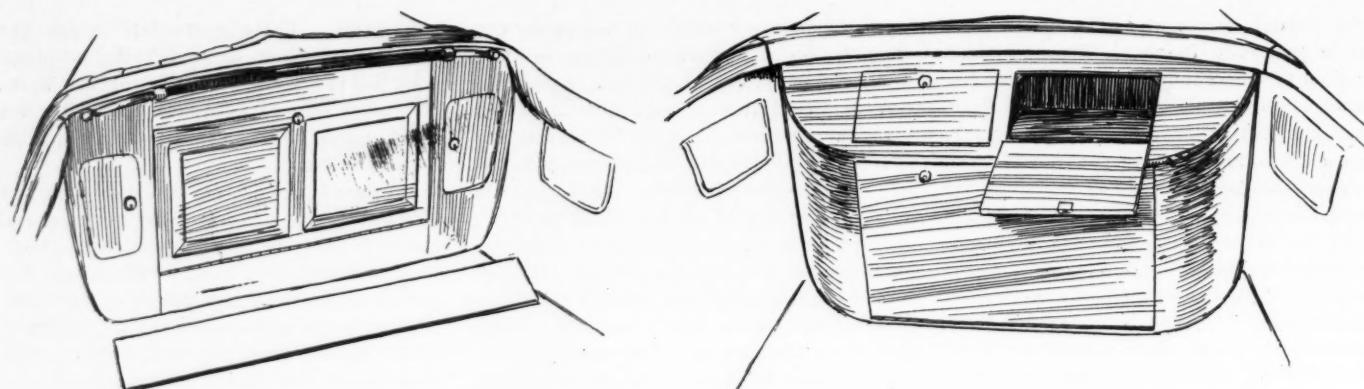
This shows the tonneau windshield of the Daniels. The glass drops down and side members fold down neatly covering the opening



This shows the novel way of treating the top rail in the Simplex. The narrow bead is aluminum



This shows the peculiar body of the Novara, which is built like a boat



The view at the left shows the compartment in the back of the front seat of the Mercer and the one at the right shows how small articles are stored in back of the National front seat

division two models at the show are attracting attention: One is the two-passenger Scripps-Booth with four-cylinder motor. This car is a comfortable job. The seats are deep and well fitted to the body. The doors are wide.

Two-Passenger Peerless

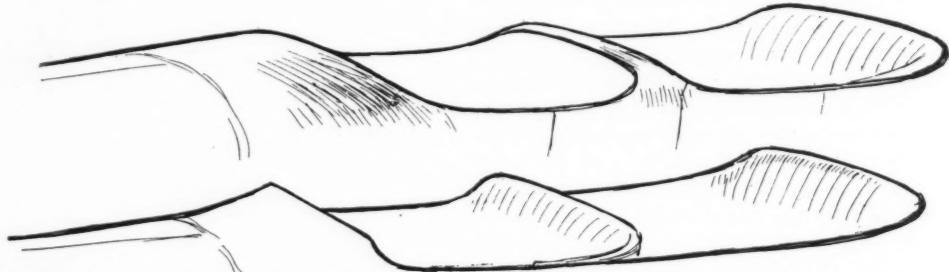
Another two-passenger job is a Peerless roadster in bright green. Its chief merit lies in the very large rear deck in which is carried the spare wire wheel. There is also additional baggage facility. It is the best attempt at inclosing the spare wheel in a runabout of the large type that has been seen at any show. Smaller makes have successfully handled this job in former years. The rear deck is very wide, giving perhaps a too broad appearance, but this may possibly be corrected.

Pathfinder deserves particular mention for the study it is putting in its runabout and touring car bodies. In the touring car it has made one of the best efforts of the year at housing spare tires within the body. To do this a tire carrier is placed under the body at the rear. It is true this gives a rather unusual appearance to this part of the car, but the effort should be commended. There is no more difficult job

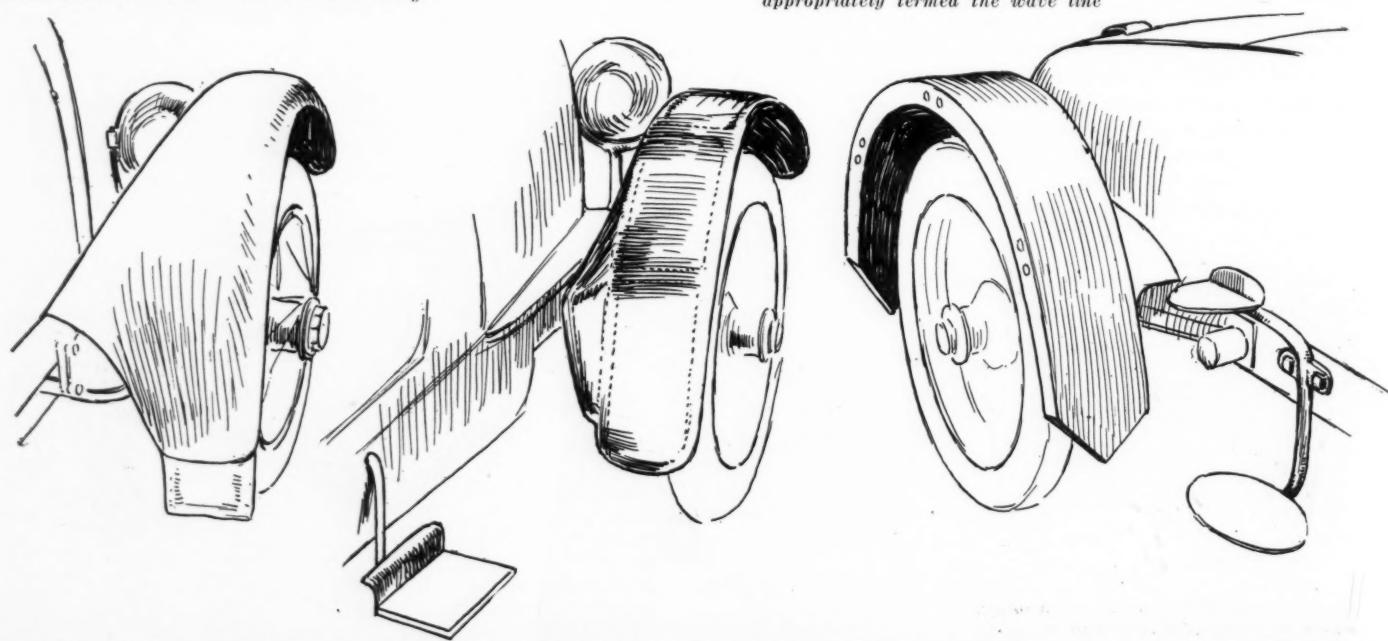
confronting body builders than that of inclosing tires. Reference to the body review at the Salon show in this issue will remind you that several custom body builders have almost given up hope of satisfactorily solving this job. In motor car design the unusual has generally come from outside sources and in this respect it may be that the mind unhampered by the tradition of body design may accomplish this new job. The Pathfinder runabout is the only example of the show of housing the top within the body. The company had this design a year ago and runabouts in use during the entire year are demonstrating that it is possible to keep the top dry and clean with such a

design and it cannot be doubted that it adds materially to the appearance.

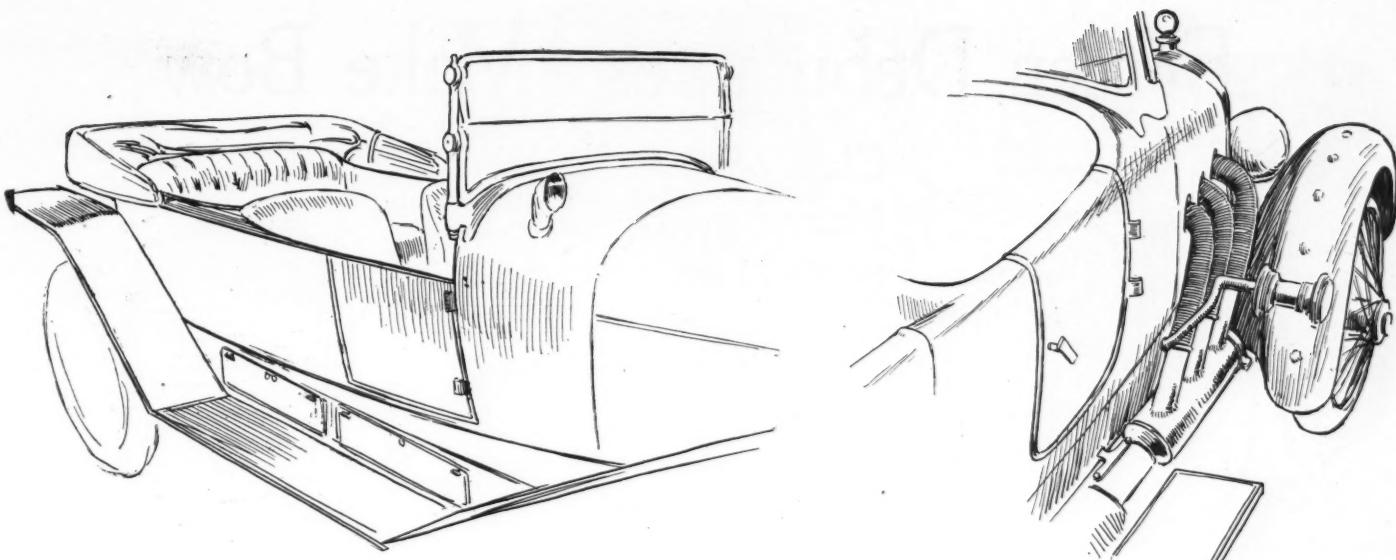
In the closed body types, Cole should be congratulated on its Springfield type which takes the form of a four-door touring job that can either be a sedan or a limousine. The partition back of the front seats made of two sliding glass panes can be removed accomplishing the transition from a four-door limousine to a sedan. There are many other details of merit in it. It is the only Springfield type at the show with four doors. The front door is particularly wide so that when opened the complete end of the seat is exposed. In the rear compartment are several small baggage spaces, in fact, there is no car



The upper sketch shows the tendency in the top line of bodies as contrasted with last year's prevailing line shown in the lower sketch. This year's type is quite appropriately termed the wave line



The running-boardless cars very much in evidence at the show. Here are some of the fender treatments. At the left is the Biddle, in the center the Daniels leather-covered fender, and at the right the Lancia



At the left is the very low Locomobile body showing also a tendency to treat rear fenders the same as those in front. At the right is a special Biddle job which is attracting much attention on account of its racing type exhaust

at the show so well taken care of in this respect. It is questionable if there is any other car that gives so much evidence of the designer having in mind the general convenience of those to ride in the car. The wide covered space back of the front seat will accommodate many articles essential in touring.

In the town-car field Marmon merits commendation for a Holbrook body which is the best in the show so far as excellence and perfection of workmanship are

concerned. The body is a typical town car design with particularly good lines and every detail of workmanship well looked into. The doors fit unusually well, in fact, many makers of stock bodies could study the workmanship of this one, not that there would be any thought of duplicating it but it does suggest improvements that could be incorporated in stock jobs with a very limited outlay.

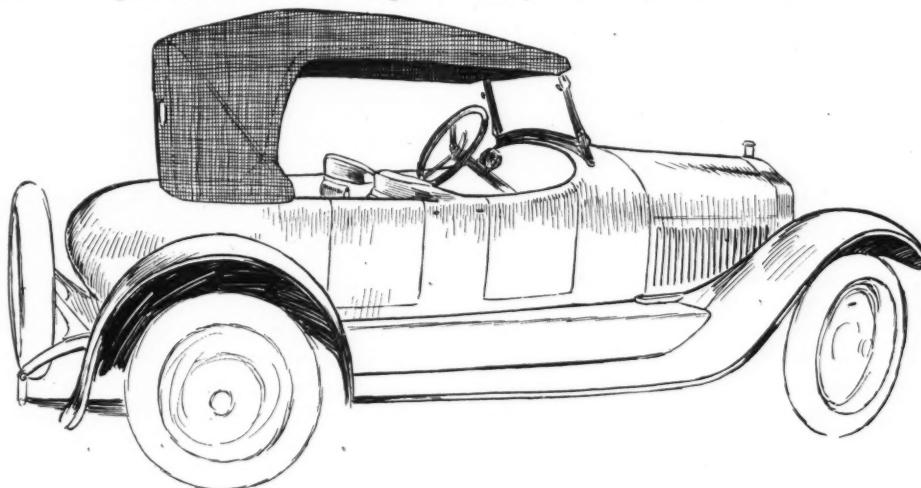
A review of the show job brings to light many new body models that have been

entered on the stock schedules of different factories. Deliveries of several of these will not be possible for weeks, and in some cases months.

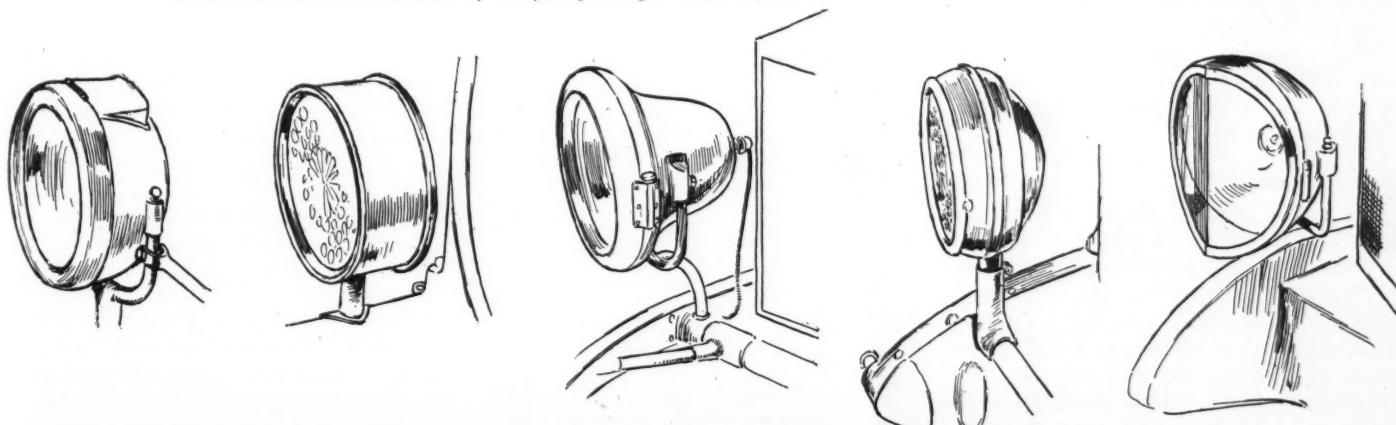
In this connection Saxon has a new \$1,250 sedan on which it is just starting delivery but hopes to ship sixty during January. It cannot be classed with the Springfield type but has a permanent top with completely removable sides. The two center pillars are removable and are carried under the seat. The upper glass drops into the door panel. Emergency side curtains for summer use are carried. There is a double windshield and the individual front seats tilt forward to permit wider entrance at the center doors.

Paige has a convertible roadster for four passengers which is one of the newest additions to its line. It has a folding rear seat, and back of the front seat is a very complete bank of compartments for all kinds of touring necessities, baggage, etc. The top is not a folding design but a canopy style supported front, rear and in the middle. When not in use the canopy cover folds and is put in the car. Deliveries will start in three weeks. The price is \$1,695.

King has its new touring sedan on which
(Concluded on page 25)

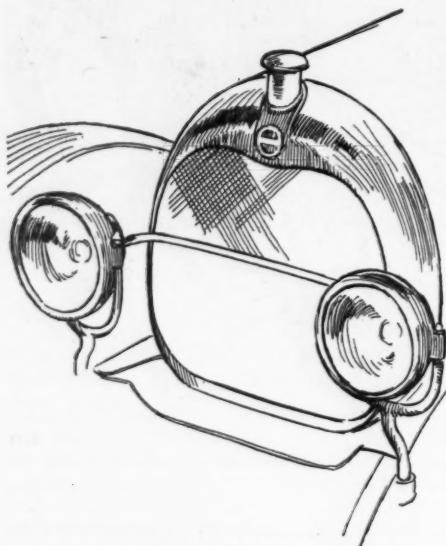


This shows the characteristics of the four-passenger White roadster



Some of the novelties in lamp designs. Reading from right to left they are: Locomobile, Phanina, Rolls-Royce, White and Biddle

Fifteen Debutantes Make Bow



The shape of the radiator of the Majestic is distinctly individual

NEW YORK, Jan. 6—The motoring world looks to the annual exhibition at the Grand Central Palace for first view of new cars and expects that manufacturers who have developed new designs are keeping them in hiding in many cases to spring as a surprise at the show. This has been the case this year and there are fifteen cars at the show that never have been shown to the public before and of these seven have never been announced in any way. The majority of the new cars are assembled jobs, so that from the standpoint of engineering development few of them are important. There are one or two departures of which the most important on account of the standing of its maker is the Buick Big Six with its intake valves considerably larger than the exhaust valves. Another and important one is the new Paige trunnion drive. The Bateman front drive car and the Drexel 16- and 8-valve overhead motors are more interesting from a development standpoint than for any other reason.

The new cars are the Bateman, McFarlan Magnetic, Drexel, Oldsmobile six, Enger four, Columbia and Ben Hur, which are altogether new and have never been mentioned and the Scripps-Booth four, Buick big six, Overland ninety, Willys-Knight eight, Doble steam car, Majestic, Pullman and the Dey electric, which are exhibited for the first time.

New Oldsmobile Six

Oldsmobile kept its six for a show surprise and it is now on exhibition for the first time. It incorporates an I-head block $2\frac{1}{2}$ by $4\frac{1}{4}$ engine of the external-pushrod type with detachable cylinder head, but with a casing of aluminum covering the overhead rockers as well as the side mechanism of the valves acting as a silencer and also preserving the simple exterior and non-dust catching qualities

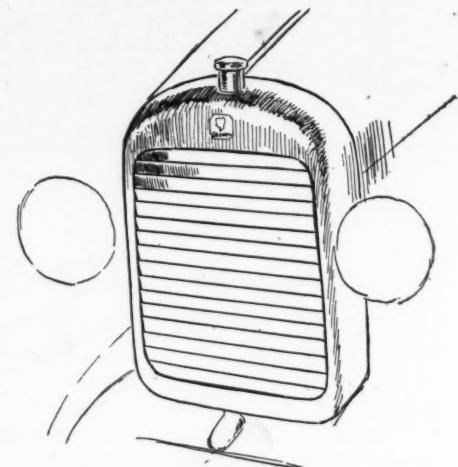
Class of '17 Shows Many New Developments of the Twelve-month

which are the aim of all the designers of the present.

The unit is free from radical features of design, being practically conventional throughout, and in fact this same conventionality is carried throughout the entire car which is a substantial vehicle provided in either five-passenger touring or four-passenger roadster form at \$1,095. It is known as the model 46.

As far as the fittings and auxiliary attachments of the car are concerned, there is nothing unusual, the carburetor being a Johnson, ignition, starting and lighting by the Delco system, gasoline feed by Stewart vacuum, water circulation by pump. The drive is taken by a leather cone clutch which is housed, together with the engine and gearbox, as a unit powerplant. There are two universals, one at either end of the propeller shaft, both being Spicers and transmitting the propulsive torque to a full-floating spiral bevel rear axle, having a gear ratio of $4\frac{1}{2}$ to 1. The wheelbase is 112 in. and the tires are 32 by 4.

Some of the smaller features about the car show a great amount of attention paid to detail. The spark plugs are very accessibly located in the side of the engine and are not concealed by this silencer cover which is put over the valve action. The mounting of the horn is substantial and yet free from objectional appearance, this being gained by mounting it behind the dash with the flange carrying the diaphragm acting as the supporting member connected the horn to the dash. The upholstery is the latest type of plaited leather over spiral springs and the leather is mounted over the top rail very neatly. Another little feature is in the material used to



The Columbia is fitted with a cold weather shutter for the radiator

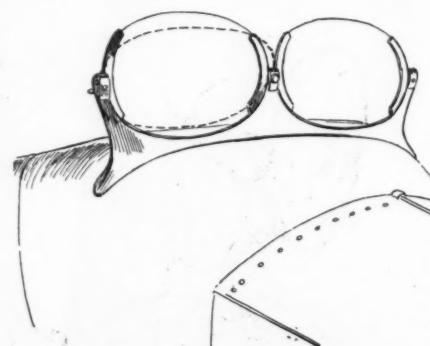
cover the running boards and floor in the driver's compartment. This is a composition known as Linkrustum. There is a new shape of radiator conforming to the original lines carried out in the eight-cylinder Oldsmobile. On the spring bolts there are oil cups instead of grease cups in line with recently observed tendencies and the rear springs are semi-elliptic with the spring carried back to form what might virtually be a second member in the three-quarter elliptic shape, that is, the termination of the frame acts as the upper spring member. Both the steering wheel and the dash are Circassian walnut.

Columbia Six

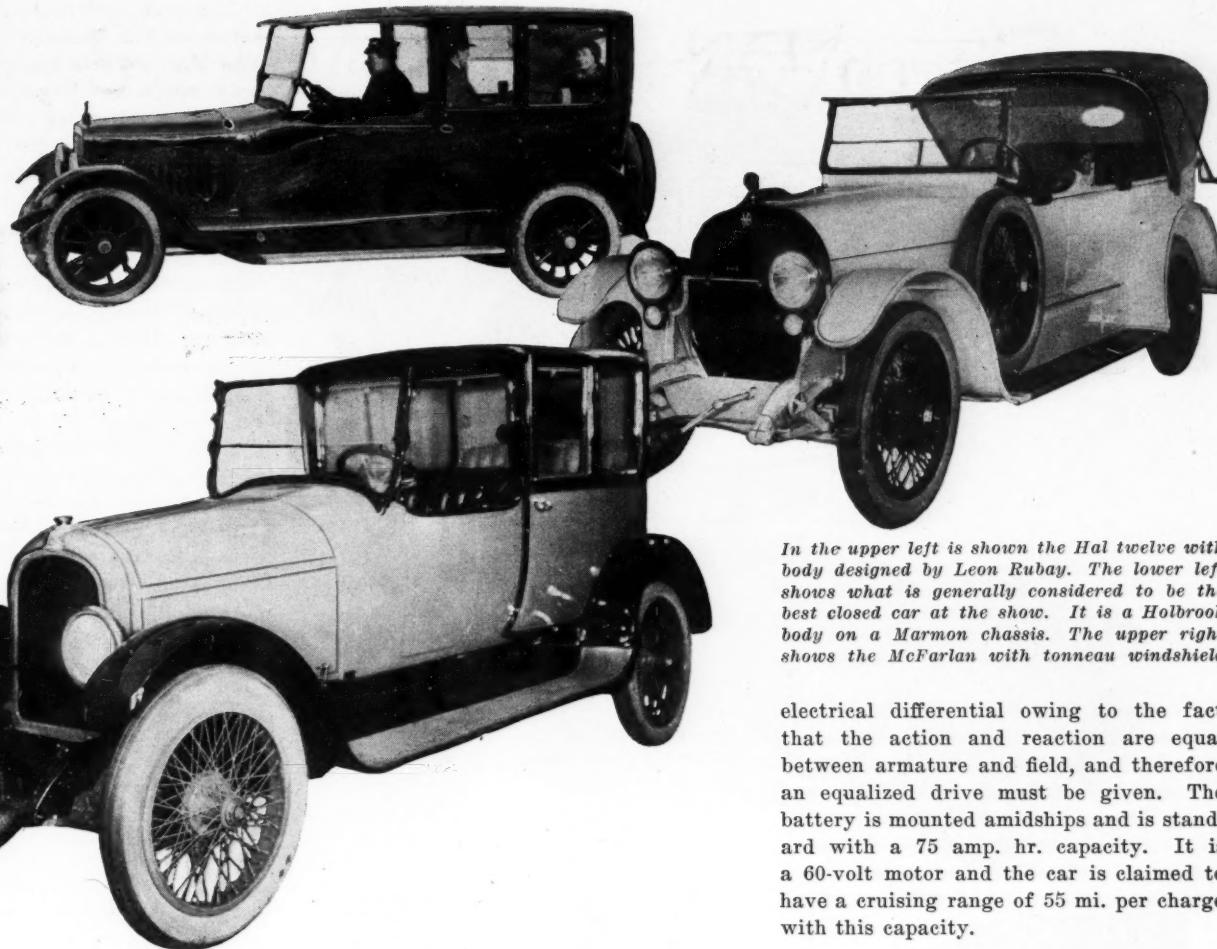
The Columbia six, product of the Columbia Motors Co., Detroit, which has been under development for some time, was exhibited. This is an assembled unit with familiar parts throughout. The engine is a Continental six, being the popular $3\frac{1}{4}$ by $4\frac{1}{2}$ L-head block design used in a number of the assembled products this year. The clutch is a Borg & Beck with the Warner gearset, these three units being assembled as a unit powerplant. The drive is through Spicer universals to a floating Timken axle and the suspension is upon Detroit self-lubricating springs of cantilever design. The rear cantilever is 49 in. In equipment Ward-Leonard starting and lighting is used, Atwater Kent ignition, Stromberg carburetor and a Warner steering gear. The wheelbase is 115 in.

Ben Hur a New Car

Another new assembled car is the Ben Hur, made by the Ben-Hur Motor Co., Cleveland. This has a Buda engine, being the unit rated at 60 hp. with $3\frac{1}{2}$ in. bore and $5\frac{1}{4}$ stroke. It is a block L-head design, lubricated by combination splash and pressure, cooled by pump circulation with Bosch high tension magneto for ignition. The car has standard transmission parts with Timken axle. It has a wheelbase of 126 in. with



A special Roamer job has individual windshields so that one passenger may get ventilation without affecting the other



In the upper left is shown the Hal twelve with body designed by Leon Rubay. The lower left shows what is generally considered to be the best closed car at the show. It is a Holbrook body on a Marmon chassis. The upper right shows the McFarlan with tonneau windshield

35 by 4½ in. oversize tires. Starting and lighting is by the two-unit Westinghouse system. The car sells for \$1,875 as a four-passenger roadster, five or seven-passenger touring. The seven-passenger touring sedan is \$2,750.

Majestic Eight

A new car to be exhibited is the Majestic, made by the Majestic Motor Car Co., New York. This incorporates the unit power plant made by the Colonial Motors Co., including an eight-cylinder V-type engine, three-plate clutch and three-speed gearbox. The remaining drive parts are conventional, being through a Hotchkiss drive in connection with three-quarter elliptic springs, and flexible propellor shaft mounting with universals at each end. Ignition is by Atwater Kent, starting and lighting by the Auto-Lite system and gasoline feed by Stewart vacuum.

The engine is a straight V-type with 3 by 5-in. bore and stroke, having all valves inclosed. Cooling is by thermo siphon and lubrication by pressure. A unique feature in the body is that the panel at the back of the front seats can be pulled up forming a table for the occupants of the tonneau. The car sells for \$1,650 as a five-passenger touring. It has a wheelbase of 125 in. with 32 by 4 tires.

Dey Electric Simple

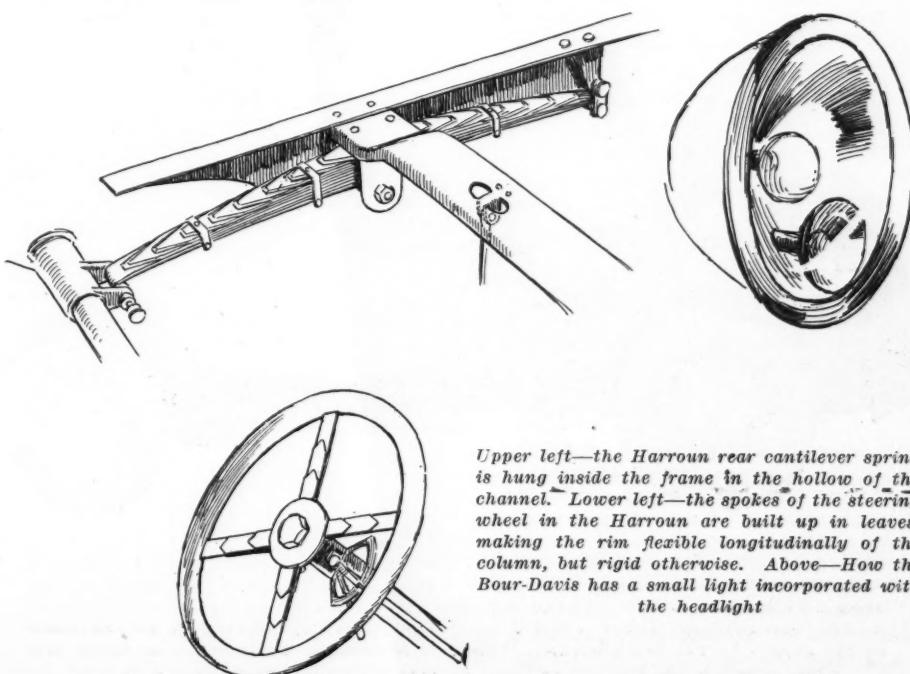
From the standpoint of simplicity the chassis of the Dey electric, made by the

Dey Electric Corp., New York, is unique. The chassis consists merely of a framework for supporting the body and axles with the entire driving unit being located as a part of the rear axle. This is the General Electric double-rotating motor in which both the field and armature revolve. The field is connected with an axle to one of the rear wheels and the armature to the other axle. This combination gives an

electrical differential owing to the fact that the action and reaction are equal between armature and field, and therefore an equalized drive must be given. The battery is mounted amidships and is standard with a 75 amp. hr. capacity. It is a 60-volt motor and the car is claimed to have a cruising range of 55 mi. per charge with this capacity.

McFarlan Magnetic Six

McFarlan had on exhibition for the first time their full magnetic six. This is the regular six-cylinder McFarlan chassis, but with the clutch and gearbox eliminated and in its place the Vesta centrifugal electric transmission. With this the control of the speed changes is accomplished electrically by buttons governed by the operator.



Upper left—the Harroun rear cantilever spring is hung inside the frame in the hollow of the channel. Lower left—the spokes of the steering wheel in the Harroun are built up in leaves, making the rim flexible longitudinally of the column, but rigid otherwise. Above—How the Bour-Davis has a small light incorporated with the headlight



Types of four-passenger cars. 1—This is a popular Pathfinder model which is known as "Ziegfeld Girl." 2—Roominess is a special feature of the Apperson four-passenger, this being more pronounced than found in any other car accommodating this number of people. 3—The four-passenger Mercer is looked upon as presenting one of the best touring bodies at the show. 4—The four-passenger Premier is unusual in that it has four doors, thus giving access to the rear compartment without disturbing the passengers in front

The Vesta electric transmission marketed by the Triumph Electric Co., Cincinnati, is comprised chiefly of three units, a dynamo, a speed compound and an automatic controller. In its installation on the car it replaces the flywheel, friction clutch, transmission gears, starting motor, lighting generator and control levers, and naturally the unit fulfills the functions of all of these.

By the use of this unit there is no mechanical connection between the engine and the driving units until a car speed under ordinary circumstances of 20 m.p.h. is reached. The driving unit up to this time is a generator or dynamo, which is substituted for the solid friction clutch ordinarily employed. Both the armature and fields of this dynamo are revolving units, the armature being connected to the engine shaft taking the place of the ordinary flywheel and forming the driving unit of the electrical transmission. The fields are connected to the propeller shaft and become the driven unit, being drawn around by the magnetic attraction of the armature. Thus, up to this point this is an ordinary magnetic clutch giving no mechanical link between the engine and the propeller shaft with each free to move independently of the other.

Behind the dynamo is mounted as a solid unit what is known as the speed compound consisting of a planetary gearset, which ordinarily revolves as a solid unit with the propeller shaft. The gears in this set are always in mesh and do not slide, except when in the low and reverse position, they do not rotate upon each other. When it is desired to increase the reduction to overcome resistance of heavy roads or inclining steep hills, a button is depressed which throws the planetary gearset into action giving an increased reduction between the motor and the gearbox, thus permitting of the negotiation of the hill. This same gearbox also acts as a reverse medium by operating the reverse switch.

At speeds lower than 20 m.p.h. the current created by the slip between the armature and fields is used to charge the battery. When the car speed is reduced the magnetic pull instantly assists the friction pull to again raise the speed to the desired point where the drive becomes mechanical or frictional.

Drexel Eight- and Sixteen-Valve

An exhibit which immediately strikes the eye as having a number of original features is that of the Drexel Motor Car Corp., Chicago. Two chassis are shown, one having an eight-valve and the other a sixteen-valve overhead camshaft engine. These are the Farmer motors and strongly hint at racing-car design. There is a great amount of similarity between the two engines, although one has two camshafts overhead and the other but one.

Both motors are fours and the leader is

the sixteen-valve type which resembles somewhat the Peugeot from exterior appearance. There are two overhead camshafts giving Y-shaped chain drive, which is stepped up from the crankshaft to an auxiliary shaft carrying the magneto, oil pump and fan pulley, then through an idler sprocket and up to the camshaft which runs the length of the engine overhead. By the use of double valves the manufacturers claim an increased possible area of 69 per cent with better action due to the permissibility of lightweight springs and a great reduction of valve inertia due to the reduced weight of the valve head.

In working out the valve drive the Morse silent chain is used with a simple adjustment which would permit anyone, even an inexperienced person to take up the wear and stretch. The entire chain drive is quite accessible and the cylinder heads are removable giving free access to the combustion chamber. A feature of the engine is the extensive use of aluminum castings.

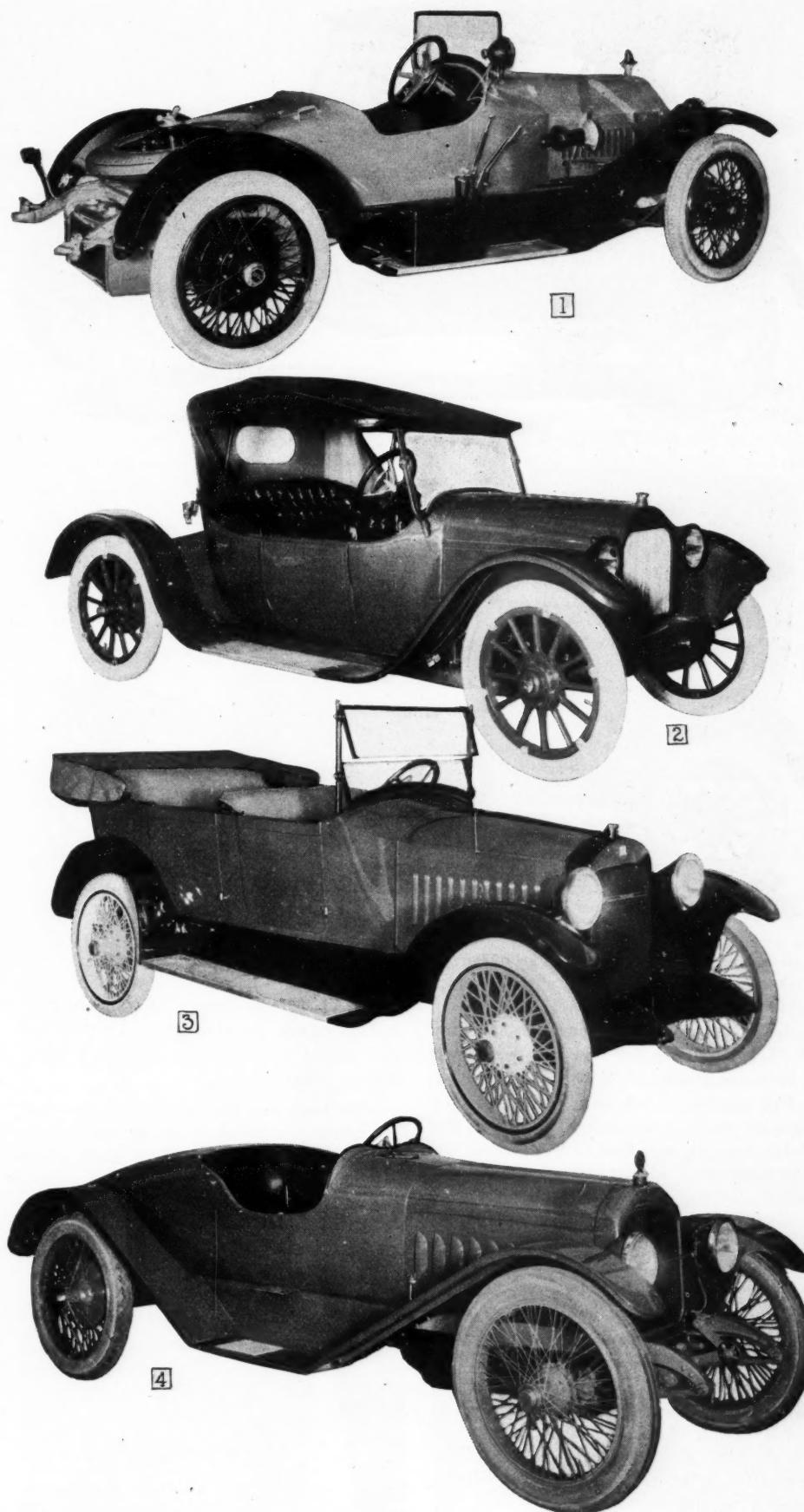
The layout of the eight-valve motor is very much the same except that in having two overhead shafts to drive all the valves are driven from a single camshaft which in this case is on the center line of the engine, whereas in the sixteen-valve the camshafts are to the left and right of the center line running parallel the length of the engine. The cams act directly upon flat mushroom followers transmitting the valve drive through guided tappets directly to the valve stems which enter the centers of the combustion chambers. With this arrangement it is possible to operate the camshafts and valve tappets in oil-tight housings which are packed with grease and this is a considerable factor in securing silence in the operation of the engine.

Both eight- and sixteen-valve engines are the same size, being $3\frac{1}{2}$ by 5. with the cylinders cast in a single block. The sixteen-valve engine has valves $1\frac{1}{2}$ in. in diameter with the two camshafts carried on three Tobin bronze bearings.

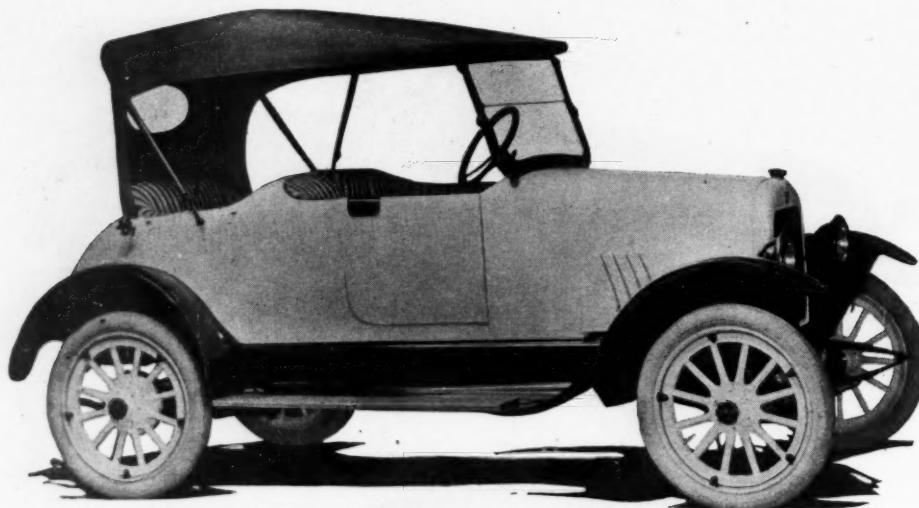
For carburetion the Stromberg $1\frac{1}{4}$ in. is used. Ignition is by Bosch DU 4 high-tension magneto and starting and lighting by the Bijur 6-volt two-unit system in connection with a Willard storage battery. Cooling is thermo-syphon with lubrication by the combined force feed and splash system. The oil is forced by a plunger pump to the front chains and crankshaft bearings with the remainder of the internal lubrication taken care of by splash.

Enger New Four

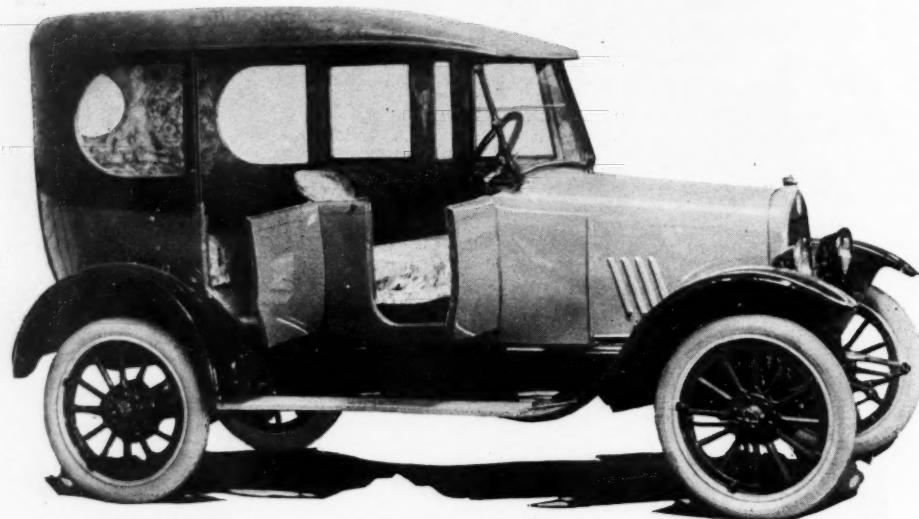
Besides the Enger twin-unit twelve which is attracting attention on account of its unique feature of being convertible into a six-cylinder unit, a new four is shown at the Enger booth. This is also a valve-in-head design, with the well-known overhead rocker type of valve ac-



Some of the feature cars at the show. 1—This is the sixteen-valve Stutz roadster which carries the spare wheel in the rear deck. 2—The front-wheel-drive Bateman is so low that the top is not over 62 in. above the ground. 3—The Liberty is said to be one of the best five-passenger jobs at the show. 4—The Peerless roadster is bright green with green wheels. Someone termed it "Salad with French dressing"



The four-passenger Briscoe roadster which uses striped upholstery



This is the Briscoe model E convertible sedan, tapestry-upholstered

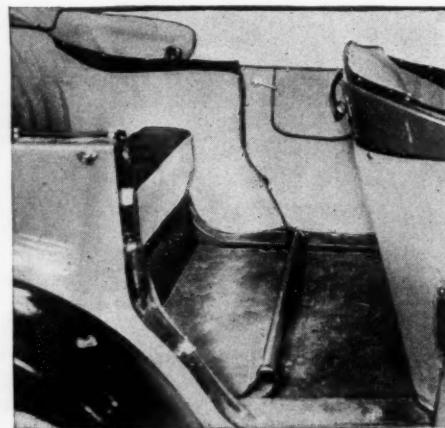
tion and exterior pushrods. The overhead rockers are covered by a silencer plate held in place by two studs and easily detachable for adjustment purposes. A claim of 36 hp. is made for this unit which has a bore and stroke of $3\frac{1}{8}$ by $4\frac{1}{8}$.

The engine, clutch and gearset form a built-up unit powerplant in which the clutch housing is bolted to the rear of the crankcase and also to the rear of the motor casting on a projection giving a firm support to the extension units without including any wasted material. By this system the effect of the bell housing is secured together with its rigidity, but some accessibility is gained. The flywheel is not housed and projects below the casting. The clutch throwout mechanism is left exposed by this system of mounting with the gearbox carried on extension pieces giving the effect of a housing integral with the crankcase. Three-point suspension is employed with this built-up housing scheme.

The new Atwater Kent closed circuit ignition system is used with a double unit starting and lighting system. Gasoline feed is by Stewart vacuum and lubrication by constant level circulating splash. There is a plunger pump in connection with this

oiling system which is featured by the fact that it has no ball checks. This pump plunger is driven directly off the camshaft and its valves are also driven by the same unit being positive operating and hence cannot become stuck.

With the open housing behind the rear end of the crankcase, it is natural that the leather-faced cone clutch is used. This has adjustable spring tension, the adjustments being accessible without removing



This gives a good conception of the proportions of the Liberty tonneau

any cover plates. The gearbox, while mounted as a unit powerplant, has also the advantages of central location, thus shortening to some extent the propeller shaft. The drive is through a single universal joint and an enclosed propeller shaft to a bevel gear rear axle. The tube enclosing the propeller shaft acts as a torsional member and is connected by means of a yoke to extensions on the gearbox housing which absorbs these torsional stresses. The propulsive drive is taken through the rear springs.

The wheelbase is 106 in. and the tire size 32 by $3\frac{1}{2}$ with non-skid rear as stock equipment. The remaining equipment is complete including details such as a rear license hanger, new type of rain-vision windshield, etc., and the price is \$695 f.o.b. Cincinnati.

Unique Bateman Car

From the viewpoint of presenting something unique, the Bateman probably occupies the most conspicuous place at the show. This is a front-drive car with the engine mounted as a unit powerplant in the usual manner but the drive transmitted forward to a live front axle instead of through a propeller shaft to the rear. The chassis itself is not very radical, except where necessary departures have had to be made in order to accommodate the rest of the design to the front-drive.

The powerplant is a Le Roi unit with the regular type bell housing turned forward instead of backward. There is a dry disk within the housing and the clutch shaft, instead of transmitting the drive directly to the main shaft of a gearbox, carries a worm. This meshes with a Hindley worm wheel which floats on the differential housing. From this wheel the various reductions are obtained by an orthodox gearbox mounted transversely across the front of the car directly below the worm gearing.

All the weight at the front end is carried upon a dead axle with the live axle transmitting the drive from the gearbox and differential mounted flexibly on each side of the transmission unit. There is a universal at the point where the driveshaft leaves the gearbox and another at the point of connection to the front wheel. This gives a full universal action for the driving member and permits of free steering which is accomplished by a central pivot located directly in the axis of the wheel.

In connection with the front worm drive a model C Le Roi powerplant of L-head block type having a bore and stroke of $3\frac{1}{8}$ by $4\frac{1}{8}$ in. is used. This is a high-speed unit developing 26 hp. at 2250 r.p.m. The valve action is conventional, using a rather large diameter valve with a moderate lift having a mushroom type of pushrod. Thermo-syphon cooling, combination pressure and splash lubrication and battery ignition with the Connecticut distributor are used. The carburetor is a

Schebler and starting and lighting is accomplished by the Allis-Chalmers motor generator driven by chain.

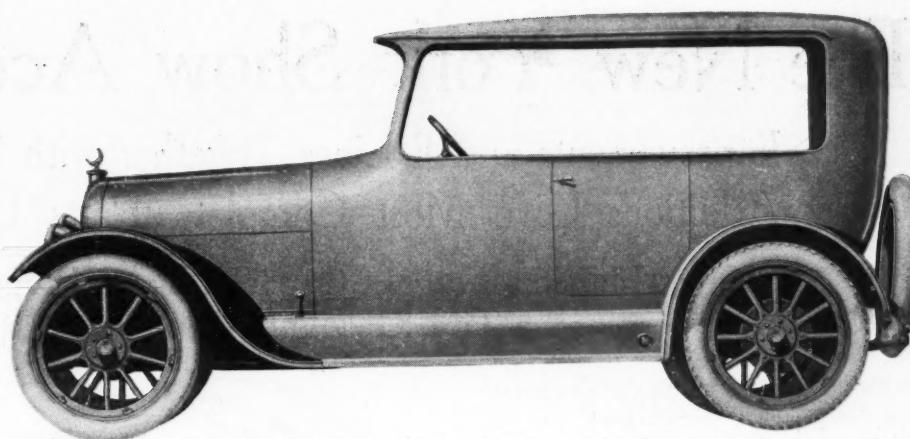
About the chassis there are some rather unusual features, particularly in the frame design of the roadster which, owing to the front drive, can be dropped very close to the ground back of the front assembly giving an extremely low center of gravity, although maintaining a road clearance of 14 in. The rear axle is, of course, considerably simplified in design on account of not having any of the driving mechanism in connection with it. It is cambered and carries the wheels on ball bearings. An idea of the saving in weight at the rear may be gained from the fact that the complete assembly with spring hangers, brake and dust flanges weighs 30 lb.

Some of the advantages claimed by the manufacturers for the front drive are a gain in propulsive efficiency due to the elimination of all but the driving components, the reduction of skidding, owing to the trailer action of the rear wheels, reduction of unsprung weight, gain in accessibility, free coasting, increased clearance, higher tractive effort and the application of the driving powers in the line of travel.

Cars Exhibited for First Time

In addition to the cars which have been described above as being new at the show, there are a number of others which have been described through the columns of MOTOR AGE, but which have not before been on general view. Notably among these are the Buick big six, Overland ninety, Willys Knight eight, Doble steam car, and a great many which are not new models, but are improved editions of the designs brought out previously. Descriptive notes of all these cars and the full specifications of the majority are given in MOTOR AGE for Jan. 4.

Chevrolet has revealed a brand new eight with four-passenger roadsters and five-passenger touring bodies, selling for



This shows the Moon six, 6-66 sedan with the windows lowered

\$1,385. It has the usual V-type engine, with cylinders 3½ by 4, with the valves overhead and adjustable while the engine is running. Valve diameter is 1½ in., and valves are operated by external push rods with overhead rockers. Oiling is by splash with dash, sight-feed carburetion by Zenith double-jet type and lighting and starting by Auto-Lite, with Remy ignition. The clutch is a leather faced cone, with ten engagement springs and the rear axle three-quarter floating geared 4½ to 1. The wheelbase is 110 in. and tires 30 by 4. Drive is through the springs with double universals and inclosed torque rod. Deliveries will begin about Feb. 15.

Great Variety of Finishes on Cars at New York Show

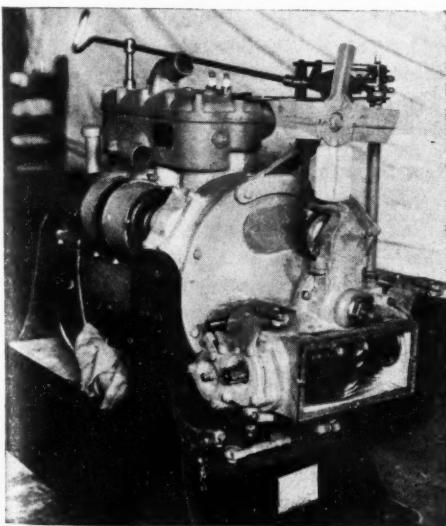
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deliveries will start February 5. The show car is finished in beaver brown. It is an adaptation of the Springfield type with a central door on each side and three large windows. The rear glass on each side is carried in a compartment back of the seat but the door glass and the front window lower into the side of the body.

Pierce-Arrow has a small exhibit of three special cars. The most spectacular is a four-passenger roadster in brilliant yellow with tan leather victoria top and upholstery to match. A special job is a town brougham luxuriously upholstered in blue tapestry. There is a limousine upholstered in exclusive Adam period tapestry which has as its central feature wedge-wood medallions.

Convertible bodies as pioneered by Kissel some years ago are seen in many places, but no new ones are in place. Kissel shows the convertible town car, which is the latest in this unique field. It is another chapter in extending the convertible idea.

There is a multitude of particularly interesting cars representative of latest body design coloring and fitting. Among these is the striking color combination on a



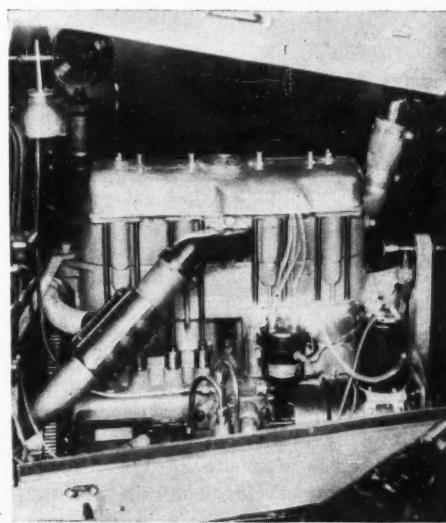
View of the Bateman, showing the driving gears which operate the front wheels

Packard touring car, in which the ordinary blue-black finish is set off by light blue door and side panels and this in turn brought out by white striping. A Roamer has a distinctive combination two- or four-passenger job in a polished aluminum body with red frame and red upholstery, and with individually adjustable double oval windshield.

A Majestic has a pale lavender Victoria in which the motor restaurant previously mentioned is incorporated. Another feature is the fact that the floor covering is reversible so that the front-seat passengers need not be bothered if it gets muddy.

BUYERS WANT CARS EARLY

New York, Jan. 9—Special telegram—Desire for early season touring is evidenced by the volume of business in cars at the Grand Central Palace accompanied by pleas for early delivery. On part buyers usually specified delivery in April or later this year. They want the cars at once. The exceptionally fine weather so far has been in part responsible for this. The attendance is estimated as being considerably larger than the corresponding days of past shows and while no official figures are given out, the attendance for the week will break all records.



This shows the right side of the new Scripps-Booth four-cylinder engine

The New York Show Accessory Corner

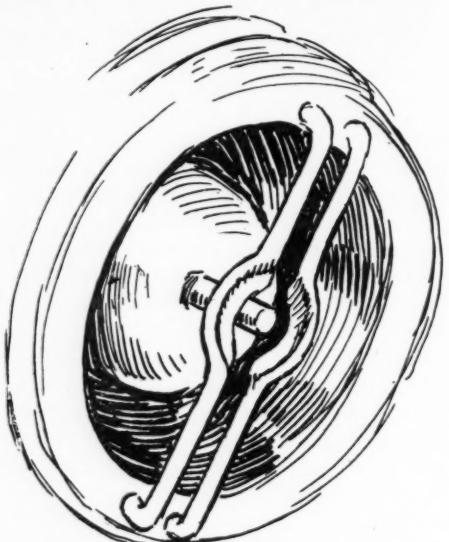
Improvements in All Lines Together with Some Noteworthy Additions Give Most Complete Parts List Ever Offered

New Things in Luggage Carriers, Spark Plugs, Ford Additions and a Tire, Gasoline, Oil Mileage Instrument

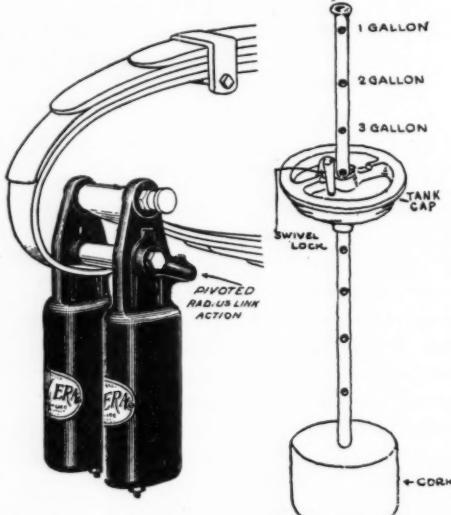
INTERESTING in the line of new accessories in the Grossman booth are the Red Head Vitristone spark plugs, which embody numerous types of Red Head constructions but with a new insulating material called Vitristone made in the company's own potteries. This new artificial stone insulator meets the requirements of the modern high-speed motor for insulating material which is capable of withstanding the severe conditions imposed by tremendous heat of combustion rapidly alternating with the intake of cool gases. Another feature of the line is the priming plug for facilitating starting. This sells for \$1.50. Standard plugs for Fords sell for 75 cents and other car types \$1, though platinum-point plugs are \$1.50 and the Big Boy type \$1.25. A number of new bumpers are shown as additions to the Ever Good line, consisting of channel and double spring bumpers for Packards and 1917 Dodge cars, similar types for Franklins and still others for Fords. Two new types of diminishing mirrors, one for fender mounting and the other having ball and socket adjustable joint and a new mini-fying beveled mirror, which reduces objects to their correct proportions and shows the relative distance between them, are also exhibited for the first time. Other new things at this booth are a combination rear tire carrier and license bracket for Fords and Chevrolet 4-90 and new models of the Ever Good windshield cleaner for shields having round, oval or square tubing. Emil Grossman Mfg. Corp., Brooklyn, N. Y.

Touring Luggage Carrier

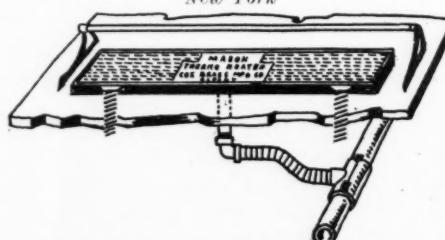
There are two new ideas in the Jay & Dee quick-detachable touring luggage carrier. The device is made up of two overlapping strips of metal that extend across the running board, the ends being connected by a strap which passes over the luggage, which fastens with a clamp which is screwed up by a thumb nut against the lower surface of the running board. There is a ratchet-tooth connection between the two strips of metal which permits of extending the width to accommodate unusually wide pieces of luggage, and the clamp bolt has a smooth head which does not necessitate boring holes in the running board nor damage it in any way. Price \$2.50 per set of two. The Aderente headlight deflector has been improved. The



A new type of Mosler plug, embodying a double-shoulders insulator and knife-edged electrodes—A. B. Mosler & Co.



The New Era twin-elliptic shock absorber with pivoted radius-link action
New Era Spring & Specialty Co., Inc., Detroit.
Ever-Right gasoline gage for Fords—Universal Distributors, Ltd., New York



Showing method of installation of the new Mason thermo heater—Cox Brass Mfg. Co., Albany, N. Y.

device now covers only the upper half of the headlight lens, thus eliminating the blinding rays, but retaining the full measure of light on the roadway. In the construction of the device, which consists of strips of metal running across the lens, each strip is bent at such an angle that the light rays from the upper half of the reflector are projected parallel with the ground instead of upward. The price is \$2 per set. Jay & Dee Specialty Co., Inc., New York.

New K-W Lock for Fords

In the new K-W lock for use on Fords the housing covers the entire switch face whereas in the old type the cover went on top of the switch and could be pried off. This device has been approved by the underwriters' laboratories which means a reduction in insurance fees for cars equipped with it. In addition to locking the switch, the autolock also locks the four coil units into their box. The price is \$3.50. K-W Ignition Co., Cleveland.

Gemco Specialties

A new tire holder especially for Chevrolet 4-90 cars combining rear lamp and license carrier is found in the Gemco booth. The device is made up of two substantial hooks and bolts directly to the frame requiring no drilling or mechanical changes. It weighs 21 lb. and sells for \$4 complete with straps. At this exhibit is also found the Gemco steam vaporizer for mounting on the exhaust manifold, the steam generated being injected into the intake manifold. This device has been described previously in MOTOR AGE. Ford size sells for \$11; other sizes, \$12. Gemco Mfg. Co., Milwaukee.

New Superior Products

New things in the Superior line comprise a radiator shell for 1917 Fords, wire wheels for Ford cars with demountable rims and numerous other products are new in the Superior offerings. The radiator shell has an apron attached covering the Ford front axle, the shell having a V tapering top, designed to give an elegant effect when slipped over the radiator. The regular hood is retained. Price, in black finish, \$8; nickel finish, \$10.50. The wire wheels with demountable rims are furnished complete with ball cups, dust cups, wrench, nuts, etc., the right front hub being arranged for a speedometer gear and

the rear hubs with brake drums, etc. The use of demountable rims obviates the possibility of spokes working through the rims and pinching the inner tubes. A set of four wheels complete with rims weighs 130 lb. There is one extra demountable rim included in the price of \$40. The wheels are finished in black baked Japan with nickel-plated caps. The Superior company is also showing a large line of various types of custom made brass and nickel lamps for special body work in addition to its regular line of motor car lamps. The line also includes special products for Ford cars, such as radiators, streamline hoods, windshields, crowned fenders, running boards, etc. Superior Lamp Mfg. Co., New York.

Aitchandee Shock Absorber

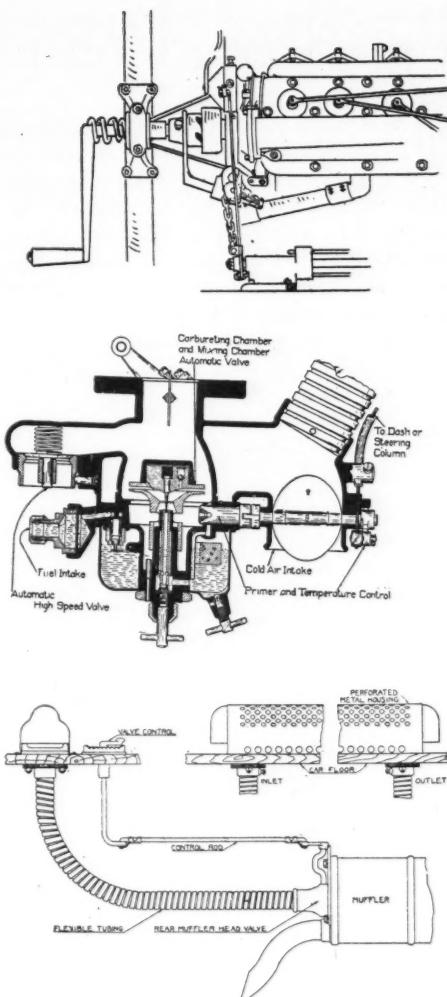
A new type of Aitchandee shock absorber appears at the show. It adheres to the standard Aitchandee principle of construction embodying leverage arm and spring, except that each unit of the new type comprises two arms and springs, the new model being known as the Twin Aitchandee. It sells for \$12 per set of four as compared with \$10 per set of the single type. The Aitchandee safety spark retarder for Fords is a small attachment to the spark-control rod extending from the bottom of the Ford steering column to the timer. The device automatically retards the spark when the crank is pushed in and can be set to bring the spark lever to any notch. It is easy to attach having only one pin and one bolt to change. The price is \$3.50. H. & D. Co., Inc., Goodland, Ind.

Shakespeare Carbureter Improved

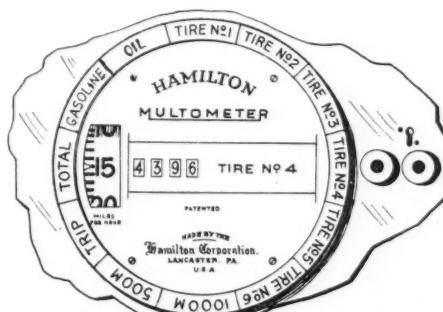
The Shakespeare Co. has brought out carburetor controls to meet the S. A. E. standard 1 $\frac{1}{16}$ in. throw. These are for both dash and steering-wheel mounting. An improvement has also been made in the Shakespeare automatic carburetor. It now incorporates a patented primer consisting of a tube leading from the mixing chamber to a point above the throttle so that the primer functions separately, delivering a gurgled mixture of fuel and air directly into the manifold, which greatly facilitates starting, especially in cold weather. Shakespeare Co., Kalamazoo, Mich.

Wagner-Hoyt Instruments

The Wagner-Hoyt company exhibits motors, generators, battery and magneto ignition units and the appurtenances. These are all Ward-Leonard instruments weighing respectively 10, 15, 24 and 18 lb. and having capacities of 8 amperes for the 10 lb. instrument and 10 amperes for the others. The Ward-Leonard system of control is used with each. Two types of starting motors are manufactured. The W-H battery ignition set consists of an interrupter, spark coil and condenser, distributor and switch. A feature of the breaker mech-



Safety spark retarder for Fords—The H. & D. Co., Goodland, Ind. New primer and controls in Shakespeare carburetor—Shakespeare Co., Kalamazoo, Mich. Type DP heater for Cadillacs and Packards—The Perfection Spring Service Co., Cleveland, Ohio



Gasoline, oil and tire consumption recorder and speed indicator—Hamilton Corp., Lancaster, Pa.



Showing one position of Green safety signal—General Safety Signal Co., Newark, N. J.

anism which is a simple cam-operated type, is that it is lubricated by a felt roller which keeps the internal friction at a minimum. The magnetos are made in two styles, the W-H and the Volta. The W-H is a two-spark-per-revolution type of high tension instrument with the distributor self-contained. The Volta is a distinctive type with waterproof qualities. The condenser is mounted in a sealed box on top of the pole pieces, the armature is dust and waterproof. The high-tension collector ring is directly under the distributor giving a short, direct, waterproof connection. Wagner-Hoyt Electric Co., New York.

Special Perfection Heaters

Special models for Cadillac eights and Packard twin sixes are now available in Perfection heaters. They differ from the standard heater in that there is an inlet at each end to take care of the exhaust gas from each pipe and an outlet in the center. Heating tubes are protected by a perforated metal guard designed for strength without interfering with air circulation. The Cadillac type with oxidized brass housing ready to install sells for \$32.50. For a floor type heater the standard type A can be connected to each exhaust pipe, this outfit costing \$31. In the Cadillac Victoria the type A is satisfactory when connected to the right hand exhaust pipe only. Price \$25. Perfection Spring Service Co., Cleveland.

Hand Direction Signal

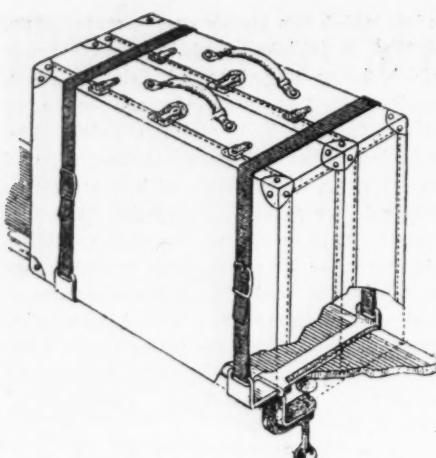
The Green Hand safety direction signal illuminating front and rear simultaneously is a new one this year. The hands are green and can be seen lighted at noon-day 100 ft. away. The tail light is combined in the rear signal box. While the signal was primarily designed for night work, its value as a day signal has been demonstrated. Throwing the lever to the right, front and rear hands light up pointing to the right indicating a turn in that direction; to the left on the switch illuminates front and rear hands pointing to the left; throwing the lever back illuminates both. General Safety Signal Co., New York. It is exhibited by Osch & Co., Inc.

Mason Thermo Heater

The Mason instrument is an exhaust heater which rests on the tonneau floor and not in it. The heat is controlled by a thermostat. The dimensions are 27 by 4 by $\frac{1}{8}$ in. There is $\frac{1}{4}$ in. clearance between the floor and the heater. It is a simple matter to install this heater as it is merely necessary to cut a V-shaped hole in the muffler with a hacksaw and bore three holes in the floor of the car. Prices are \$10 and \$15. Cox Brass Mfg. Co., Albany, N. Y.

New Type of Mosler Plug

The real feature of the Mosler double hub plug is that the insulator has a double hub or shoulder on it so that the nut



*Quick-detachable touring luggage carrier
—Jay & Dee Specialty Co., New York*

which holds the insulator in place bears on the upper shoulder. The pressure between this point and the lower shoulder is more evenly distributed and there is less danger of breaking. The spark jumps from the central electrode to two knife edges, one on each side, which are said to remain so hot that it is impossible for carbon to collect on them and consequently, the gap cannot be short-circuited. At the same time there is no danger of burning the metal because it is made from a special nickel manganese alloy. The price is \$1 and it is guaranteed to outlast the motor. A. B. Mosler & Co., Mt. Vernon, N. Y.

Emblems on Moto-Meters

A large selection of emblems is offered at no extra charge to purchasers of the largest Boyce Moto-Meter. These emblems include car name plates, club insignia, fraternal emblems and initial dials. Because of the great variety of these emblems it is impossible for a dealer to stock a full line and consequently, the factory is supplying these direct at no extra charge. The only change in the line is the addition of a special Overland design in which the stem of the Moto-Meter is designed to screw into the Overland radiator cap in place of the screw which comes with the car. This design may be had in all three Moto-Meter models. The Moto-Meter Co., Long Island City, N. Y.

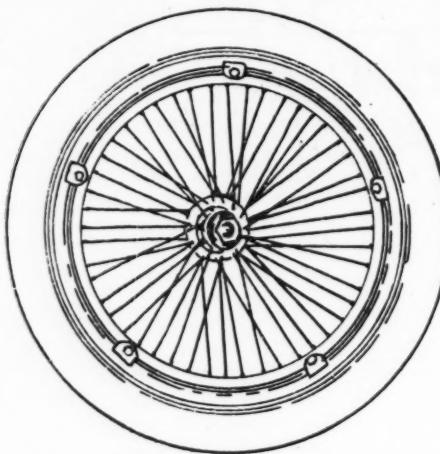
A-B-C Starters for Fords

The A-B-C electrical systems for Fords have been changed to make installation simpler and maintenance easier. The generator is now driven by a three-way V belt that also drives the fan and a stamped bracket is now used for attaching the device to the engine. Installation is very simple and requires no changes in the Ford construction, merely the substitution of longer bolts for the short bolts of the Ford engine. The price of the system includes the installation and is \$95 complete with starting motor, generator, gear-case assembly, Ward-Leonard controller, battery and battery box, starting switch,

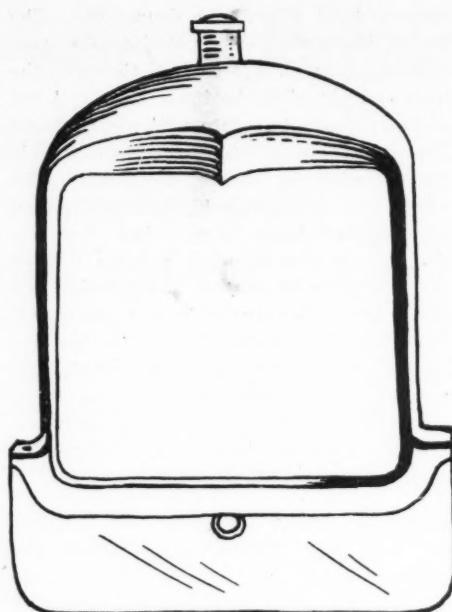
ammeter, lighting and dimming switch and all necessary wiring. A-B-C Starter Co., Detroit, Mich.

Hassler Shock Absorber

The Hassler shock absorber is designed for application to Ford cars. It consists of a spiral conical spring of chrome-vanadium steel attached to the end of the spring leaf and to the axle through a flexible lever device, one on each spring end. The shock in passing through the car must pass through a lever that is hinged to the spring and compress the conical spring before the standard leaf spring of



Superior demountable wire wheels for use on Fords—Superior Lamp Mfg. Co., New York



*Slip-On radiator casing for 1917 Fords
—Superior Lamp Mfg. Co., New York*

the car comes into action. In the rebound the spring again comes into action also tending to lessen the shock. Robt. H. Hassler, Inc., Indianapolis, Ind.

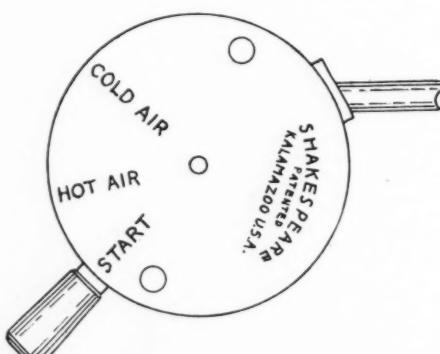
Tire Carrier with Lock

In addition to being a tire carrier of exceptionally rigid construction the Hoover device also permits the tires to be positively locked in place, thus preventing theft. On a sturdy rack bolted to the rear of the car is a circular frame over which the tires are placed. An expansion clamp is then opened forcing two spring arms behind the rim of the tire and holding it securely in place. The expansion clamp is then locked in position by means of a padlock. Several advantages are claimed for this carrier, namely that the tires are kept apart, are kept in place without either chains, straps or pins and hence there is nothing to chafe or ruin the tire. The standard size has capacity for two tires, but it is also made of one or three tire capacity. Hoover Spring Co., Inc., San Francisco, Cal.

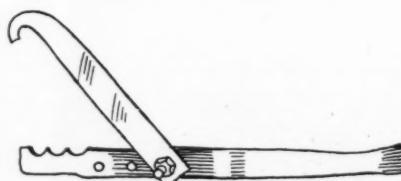
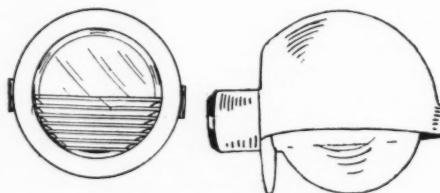
Compact Folding Seats

McKinnon seats permit carrying of more passengers. One type, the \$90 for the Ford, is made to fasten onto the rear doors, the bottom resting on the sill which takes the burden of the weight. By the use of two of these seats seven passengers may be carried in the touring car; the doors cannot be opened when the seats are in use. This type of seat can also be made to fit the Overland. In construction the seats are made of round steel electrically welded and handsomely japanned, with black art leather padded upholstery. When not in use these seats fold into a space 12 by 19 by 3½ in. and have a net weight of four pounds. The price is

(Concluded on page 47)



*New steering-column control assembly
—Shakespeare Co., Kalamazoo, Mich.*



Above, left, Adherente headlight deflector—Jay & Dee Specialty Co., Inc., New York. Above, right, Ames headlight deflector—Heinze Electric Co., Lowell, Mass. Below, Marvel chain fastener and tire tool—Automobile Accessories Co., Pittsburgh, Pa.

Parks-Motoring Kinship Emphasized

National Conference Stresses Importance of Touring in Relation to Country's Scenic Assets

WAshington, D. C., Jan. 5—The close relationship between the development of the National Parks and motoring has been emphasized strongly during the meeting of the National Parks Conference here. To-day was given to a consideration of motor travel to the parks. Touring and its relation to road building and the exceptional scenic assets of the United States composed the main theme of the day, particular attention being paid to touring in its relation to the National Parks.

A. W. Seaman of the Long Island Automobile Club told how to equip for transcontinental touring. Orville Wright naturally spoke in favor of air routes to the parks. George C. Diehl, chairman A. A. A. good roads board, told of the improvements made in the country's highways. He showed how system in the construction of highways to and through the parks would be necessary if the full benefit of the parks is to be obtained by the public. C. F. Bishop, who has made many long trips abroad, compared Europe's commercialization of scenic and health assets and our lack of commercialization, urging that we advertise the advantages and beauties of our country, the parks in particular.

E. L. Ferguson, manager of the A. A. A. touring bureau, reviewed the routes of travel in the United States. He spoke on the capitalization of scenery, history and good roads in view of the wonderful increase in touring. Among other things, Mr. Ferguson said that from east of Portland, Me., and from Quebec, Canada, less than 100 miles of uncompleted connecting highway exists. Florida is capitalizing her winter balm, her royal palm and her orange groves in prospect of further increase in motor travel as the highways are extended. A few years ago it was difficult to find even one way across the country, but now seven routes invite the traveler. Many of these long-distance interconnecting routes bear various historical and geographical names, and some are marked with the name of some man famed in the country's history. These roads branch in all directions, and the branches are practically numberless.

George Holms of the Park-to-Park Highway Association dwelt on the possibilities of a park-to-park highway system, the series of parks to be connected by a series of highways. Such a plan, Mr. Holms said, would add greatly to the pleasures and comfort as well as the enlightenment of motoring tourists. Mr. Holms also paid

tribute to Assistant Secretary Mather for much of the impetus given the park-to-park movement.

AJAX-RACINE PURCHASE CONFIRMED

Racine, Wis., Jan. 8—Following the confirmation by stockholders of both corporations of the purchase by the Ajax Rubber Co., Newark, N. J., of the Racine Rubber Co., Racine, Wis., the Wisconsin corporation has filed amendments to its articles which provide that the preferred stock may be called in and cancelled upon payment to the holders of 105 per cent of the face value, together with all unpaid accumulated dividends up to the date of such call for cancellation, the dividends to be paid out of the profits. The actual transfer of the ownership is accomplished by an exchange of securities at the rate of 570 shares of Ajax common for 100 shares of Racine Rubber common. Racine Rubber preferred is retired at 105 and accrued dividends. In addition, holders of two shares of Racine common will have the right to subscribe to one share of Ajax common at \$6,625.

NEW WIRE WHEEL COMPANY

Albany, N. Y., Jan. 6—The Wire Wheel Corp. of America, New York, has been granted a charter to manufacture wire wheels for motor cars and aeroplanes. It will do business with \$3,000,000. Its shares of capital are \$125,000, four-fifths of which is of no par value.

RECEIVERS FOR PULLMAN

York, Pa., Jan. 5—A temporary receivership has been appointed for the Pullman Motor Car Co., and the affairs of the concern are now being looked after by W. A. Keyworth, Henry D. Schmidt and Carlton L. Hoff. Officials of the company claim that the receivership was made necessary because of the heavy purchase of raw material in anticipation of future requirements. In the decree of the court appointing the three receivers a complete inventory was ordered, which is now being taken. It is purposed to resume operations in full next Thursday.

The bill of complaint filed by the plaintiffs, John C. Schmidt, George Schmidt and Carlton L. Hoff, sets forth, among other things, that the capital stock of the company is \$500,000; that in 1916 it did a business of \$3,343,000; that the amount of indebtedness is \$557,163.54, and the assets \$989,357.85; that the company is solvent and has assets largely in excess of its liabilities.

The object sought by the receivership

proceedings, officials of the Pullman company claim, is the rehabilitation and further development of the plant. The company now has contracts for more than 10,000 cars of the 1917 model, it is announced.

TO BUILD ANOTHER U. S. GARAGE

Brownsville, Tex., Jan. 5—In addition to the two large motor truck garages and repair shops which are to be built by the government for army use at Fort Bliss and Fort Sam Houston, announcement is made of the adoption of plans for the erection of a similar structure here. The quartermasters' department at Fort Sam Houston has leased two blocks of ground here which will be the site for the proposed buildings.

APPROVE SPRANGER INCREASE

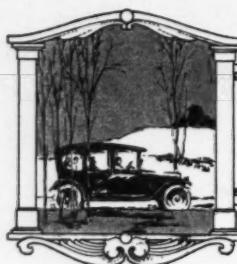
Detroit, Jan. 9—The majority of the stockholders of the Spranger Rim & Wheel Co. have approved the increase in capital stock from \$100,000 to \$300,000, all common stock. The name of the company will be changed to the Spranger Wire Wheel Co. and a new factory is to be erected which will provide a capacity of 500 sets per day.

N. A. C. C. BANQUET HELD

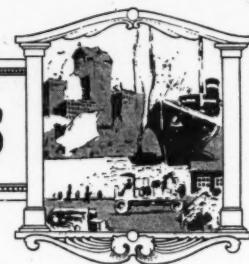
New York, Jan. 10—Motor car manufacturers dined to-night at Hotel Waldorf at annual banquet of the National Automobile Chamber of Commerce. President Clifton was toastmaster. Job Hedges spoke on the humanities business. A farce on recent legal aspects in the industry acted by New York journalists closed the meeting.

PATHFINDER AND EMPIRE MERGE

Indianapolis, Ind., Jan. 9—The Pathfinder and Empire motor car companies have been merged into a \$5,000,000 corporation with added capital which will permit a greatly increased production. The respective names of the cars will be retained, and it is probable that the Pathfinder organization will have a paramount part in the new company. The entire plan is not perfected in all its details. The financing is being handled by Boughton & Co., 120 Broadway, New York, bankers. It is understood that considerable Indianapolis capital is back of the consolidation. The Pathfinder Co. last year built 1000 cars and under the new plan will turn out 2000. The output of the Empire Automobile Co. also will be increased. The Pathfinder Co. was originally the Motor Car Mfg. Co., but reorganized several years ago and increased its capital to \$250,000, where it stood before the merger.



EDITORIAL PERSPECTIVES



The Sixteen-Valve Motor

ACH New York show for many years has had its particular spot-light, and this season the sixteen-valve motor occupies this role. It is true there are only two manufacturers exhibiting the sixteen-valve design at the show, but to this must be added the one large maker exhibiting it at the Salon. Of this total of three two represent firms that have been strong exponents of four-cylinder design as opposed to sixes, eights, and twelves. It is natural that Stutz having built the greatest reputation of any U. S. A. maker in speedway racing, and having accomplished this with sixteen-valve designs, would eventually incorporate it into a stock motor. If it has been possible to obtain great speed with four-valve construction in racing, it is possible to obtain it in stock cars with the same construction. On the other hand, White has not been an exponent of racing but has pioneered in the adoption of many stock-car features. It was a leader in the adoption of the long-stroke block motor. It was a leader in adopting the center cowl for stock body construction.

* * *

IT IS because of the unique position which both firms have occupied that more than usual attention attaches to their bringing out stock sixteen-valve four-cylinder designs. The

step is not one hurriedly taken but one that has been under development for several years by both. This carries conviction in weighing the possibilities of the future of such a design. The wider adoption of the sixteen-valve job will not be such a landslide as for six-cylinder motors or even eights or twelves for the reason that demand for a satisfactory car with any number of cylinders is much greater today than in the days when sixes were coming to the front and when eights and twelves were put on the market. It will always be expected that a certain number of firms will attempt to be rapid imitators in the sixteen-valve field, but this movement of imitation will not be so heavy in the next few months as it was after the announcement of the eight-cylinder motor. It will be very surprising if there is such a stampede as the eight provoked.

* * *

THE performance of the sixteen-valve four in the hands of owners will be closely watched during the next year. The sixteen-valve four is being accepted as a challenge to the six, eight and the twelve. The public is viewing it in that relationship to-day, and the adoption of it will largely depend on how it performs in this particular field, which should be fairly well determined within the next six months.

The New York Show

WITH 1,525,578 motor cars built during the calendar year 1916, as compared with 892,000 during the calendar year of 1915, it is not surprising that at the present Grand Central Palace Show there should not be that innovation in chassis-design, etc., which was seen a year ago. The year 1916 must go down as a production year, rather than one of engineering development. You cannot expect a concern behind in orders and confronted with myriad difficulties in buying materials to introduce new models or make basic changes in the old. The task of the last year to produce sufficient quantities of regular models has been an impossible one.

* * *

THIS year's Grand Central Palace Show has not so many engineering features, so to speak, in the exhibit category as a year ago. A year ago there were several chassis that were eagerly waited for. This year two of the largest concerns have new chassis, but they are not so revolutionary or surrounded with so much interest as were the chassis of a year ago. The exhibiting of a Doble steam car this year has been a great interest creator, and the undertone of thought with regard to the

possibility of using steam is well evidenced by the constant crowds around this chassis. Steam has been a dead issue at New York shows for many years, and the revival of interest that this chassis indicates suggests that many have been thinking more on steam in these days when flexibility and performance are so much talked about than we would have believed before the show.

* * *

THIS year's show marks nothing short of a revolution in cleaning up the accessory exhibits. There are scores of up-to-the-minute accessory exhibits instead of the eye-sores of a year ago when the majority of the exhibits were slithered over long tables covered with dirty burlap. This year you meet with highly polished tables with glass tops on which accessories are displayed. There are many well-finished cabinets in which the accessories look attractive enough to make you want to buy them. This re-construction, or new life in accessory exhibits, started a year ago when the wedge was entered. At that time half a dozen concerns set a new pace and now there are groups of them.

Palace Show Bodies

THE palace show represents the great movement in body styles, and while it is not so brilliant in versatility of design as the Salon, it represents a broader current of thought. In this respect two dominant designs have been followed in the last year: The first is the literal landslide toward the small four-passenger job which is a development of the clover-leaf of a year ago. The second is the almost general practice of dividing front seats nad leaving an aisle between them.

* * *

IT is questionable if either of these designs will become a permanent factor in the body industry; rather, they may both be classed as movements that will take a permanent place,

but not a dominating one. If the small four-passenger roadster is intended solely as an emergency type, then it will remain permanently but if it is intended to serve as a four-passenger touring car it will very probably fail. These four-passenger jobs are not four-passenger touring cars. There is not sufficient comfort in the rear seats to warrant taking a week's tour with four passengers. These vehicles have practically no space for baggage. As two-passenger jobs they are very satisfactory. They are good for three, and also good for four people in round-town work; but they cannot possibly take the place of a four-passenger touring job. There is a bigger field than ever for a good four-passenger car, one designed for this

particular field. Such a car can have accommodations for two or three suit cases in the tonneau without interfering with the passenger capacity. In these days of the utility motor car it is as essential to have space for baggage as for passengers.

THE question of the divided front seat in touring cars is a much mooted one, and the general adoption of it is due to the fact that it has not added materially to the cost

and has been a good selling argument. Individual front seats are not so comfortable as the undivided seats. They call for the use of separate robes in winter time. The separating aisle is a convenience but not used nearly so much as many salesmen would like to convince you it is. There will always be some of this type but it is more than possible that a year hence may show more using the undivided front seat than is the case with 1917 cars.

Body Design at Sixes

BODY designers who confine their entire efforts to high-priced custom body work in New York City, as well as in several other cities, are hesitating at present. They are wondering in what direction to go to bring out new body design. The streamline idea was developed to almost completion a year ago. It has now been literally absorbed body and soul by nearly all manufacturers of stock cars. The streamline idea is to-day the product of every factory; consequently, designers of custom bodies must look for some exclusive features not incorporated in the rank and file of stock-car products.

IT IS at this juncture the present hesitation is taking place. The body designers admit that they do not know which way to turn. They are trying variations, groping for something that will add that atmosphere of exclusiveness which high-priced makers so diligently seek after.

THIS situation explains why the many cars displayed at the thirteenth motor car salon, running in New York City for a week, present more variety in body design than seen in former years. After the constant movement towards streamline conceptions extending over the last three or four years the show visitor is at sixes and sevens when confronted with

Californians in Mix-Up

Many Dealers May Be Forced Out of Business by Reason of License Law

LOS ANGELES, Cal., Jan. 5—There are strenuous experiences in store for the hundreds of motor car owners and dealers in this state who failed to comply with the laws governing registration in 1916. Already, almost 1000 violations on the part of owners and some 200 charged against dealers have been detected. Unless some adjustment is made possible, dozens of dealers may be forced out of business.

Motorists, who acquired machines by transfer, or otherwise, last year and did not take the trouble to apply for a license and accompany the application with the proper fee now find themselves members of the constantly-growing in-bad class. Hundreds of cases developed through the original owner of a car, upon selling it, permitting the license plate to remain on the car. The purchaser continued to operate under this license without having the proper transfer made out and paying the required fee.

When buyers of cars of a low horsepower rating traded in a used car of a rating sufficiently high to make it ad-

visable for him to release his old plate and buy a new one for the smaller car, he thought he was putting through a shrewd deal with the state. Now, however, he finds he is charged for the old car's power and when he tries to explain he no longer owns the car, but one of less horsepower, he is assessed a penalty for his tactics of evasion that made him think he was clever several months ago. Under the law, the same plates used last year may be retained for 1917, but there must be a new license tag nevertheless. The license fee is 40 cents per horsepower.

With gross receipts for the 1917 business in the state vehicle department already amounting to more than \$1,000,000, there have been revealed more than 1000 violations of the law. More than \$3,000 already has been collected on delinquencies and this figure probably will reach \$10,000. The dealers are required to report all sales of motor vehicles to the state office, but many thought this was a bit of needless regulation and refused, or neglected, to do so. Now they find the state is refusing to license them as dealers and more than 200 have been notified a settlement must be forthcoming if they do business this year. Some of the largest concerns in the state have been notified of their failure to make proper settlement for licenses, and "strict accountability" is going to be a watchword in this state, hereafter.

the medley of body styles at the show. In one exhibit space are departures from streamline tendencies; in another, the streamline idea seems to have been burlesqued to give an aeroplane or submarine type of runabout; in another exhibit booth radical departures such as leaving off running boards or using leather fenders are noted; and in other spaces are radical body designs with heavily-paneled sides which are diametrically opposed to streamline ideas as understood up to the present.

THESE new designs must not be interpreted as suggesting new trends of body design; some of them may give such indications, but in general they represent the efforts of body designers to get somewhere out of the beaten channel and to give something more exclusive for those who desire a custom body job.

ALTHOUGH the salon has ultra-fashionable bodies, each year sees features from these fashion plates incorporated into stock car designs. The center cowl two years ago was a fashion talking point, but to-day it is a feature of stock cars. So it may be two years hence with many of the ideas in these fashionable car designs of to-day.

Barney Oldfield a Maker?

Announces Intention to Manufacture Cars, Light Trucks and Farm Tractors

LOS ANGELES, Cal., Jan. 5 — When Barney Oldfield left here yesterday for the East, the announcement was made that he intends to enter into the manufacture of motor vehicles and has a \$10,000,000 syndicate providing him with the necessary capital. The claim is made that the syndicate is composed of Los Angeles and New York capitalists and the organization will be known as the Oldfield Motors Corp. Racing motors, passenger cars, light trucks and tractors are to be built.

According to the announcement, the plans include the erection or purchase of a large manufacturing plant in Detroit, Mich. A service and assembly plant is to be conducted in Los Angeles. The details are said to have been revealed as the culmination of six months of negotiations. Arthur Fisk, former postmaster of San Francisco, a politician and until recently director of the Lucky Baldwin estate, James J. Jeffries and W. L. Wilson are named as Oldfield's local associates.

It is the intention of the veteran to make the coming season his final one in the racing game, he says.

Milwaukee Show Opens

More Than 5000 Persons Attend First Night of Exhibition in Cream City

Dealers Stage Tests with Display of New 1917 Models

MILWAUKEE, Wis., Jan. 6—As a spectacle and as a business proposition, Milwaukee's ninth motor show, which opened last night in the auditorium, is by far the greatest success of any of the expositions held here. The opening night's attendance was 5700, which is about 750 more than were present on the opening night at the 1916 show, held at about the same date.

There are 301 passenger cars and 76 motor trucks on exhibition. To accommodate these cars, the Milwaukee dealers' association has pressed into service every available inch of space in the auditorium, which covers a block. Hallways and corridors even are utilized. The decorative scheme is that of a Gothic garden, with garlands of Japanese wistaria and Alabama smilax.

As usual, the show is responsible for a number of tests by dealers. At the moment of the opening of the show at 8 o'clock last night, Mayor D. W. Hoan started a new type Olds eight, seven-passenger, which the Flint Motor Car Co., state distributor, intends to keep on a non-motor stop run until 10 o'clock Thursday

evening, when the show closes. This is a stretch of 170 hrs. The Olson-Pauly Motor Co., Ross eight dealer, is demonstrating with a Ross seven-passenger stock car which was sealed in high gear by Mayor Hoan Oct. 16, and since then has marked up 2081 miles on the speedometer without breaking the seal. Most of this mileage was made on a two week's tour of northern Wisconsin, where roads are well nigh impassable under the best conditions and at the time were covered with deep snow.

This year's show is in charge of Bart J. Ruddle as manager. Mr. Ruddle has handled seven of the Milwaukee shows for the M. A. D. The first two shows were conducted by the Milwaukee Automobile club. N. E. Osmond, president of the Osmond-Vogel Motor Co., Jeffery dealer, is chairman of the show committee. He is assisted by A. W. L. Gilpin.

Every afternoon at 3 and every night at 8:30 o'clock, there is a style parade in the main hall on a stage, 10 by 40 ft., set in the center of the arena. By arrangement with the Gerretson Co., Milwaukee, a dozen models from the big women's wear houses of Chicago and New York appear twice daily in the latest fashions for motoring, the ballroom and the drawing room.

Plankinton hall, on the second floor of the Auditorium, has been transformed into a moving picture theater, and continuous performances are given of reels showing the operation of several well-known motor car factories. A brass band and four orchestras distributed about the building, manage to keep things lively.



Virtue White, of West Ossipee, N. H., who found it too much for his car to climb the hills and plow through the deep snow in winter, devised this scheme to overcome these difficulties. Mr. White took the front wheels from the front and attached them to the body of the car, a little in front of the rear wheels. A chain was then run around the pairs of wheels. This prevents slipping and also tends to keep the car from sinking into the soft snow. A pair of steel runners in the place of the front wheels makes an ideal steering arrangement. Mr. White makes an average of 24 miles an hour over rough New Hampshire roads in winter.

Want Road Engineer?

Association Offers Services of Its Expert Free to New England Communities

Hopes Highway Builders Will Take Advantage of Opportunity

BOSTON, Mass., Jan. 5—What city or town wishes the use of a real live road engineer free? That is the question put up to a lot of boards of selectmen and city fathers in places under 10,000 population in New England. There is no string tied to it, either. The Automobile Legal Association owns the engineer, and any town may use him. This is another example of how a motor organization may do something for its members in particular and motorists in general. It is the same organization that spent \$5000 to police the Massachusetts highways and aid motorists when the state legislature turned down a proposition to do such work.

William A. Thibodeau, general counsel, is the originator of the plan. He secured Sidney von Loescke, an engineer of seven years experience with the Boston Transit Commission, to resign from that body to join the A. L. A. to take charge of the department of highways. Letters have been sent to all the officials of the smaller places in New England telling them they are at liberty to have the services of Mr. von Loescke at any time, and he will make trips to places to consult with and direct the work of repairing highways. There will not be any charge, even for his expenses. They may write to him to get specifications, and he will tell them what form of construction is the better and more economical for any particular locality. The cheapest and best way to remove dangerous curves, cut down banks, etc., will be explained. How to erect warning signs, remove shrubbery, and many other things are included in his work. The idea behind the movement is to make motoring safer for all users of the highways. As the A. L. A. now has nearly 15,000 members and is growing all the time, its officials feel that they should do everything possible to protect these drivers. It is spending thousands annually for just such purposes, and is accomplishing a great deal of good.

BOSTON DODGE CELEBRATES

Boston, Mass., Jan. 8—A dinner was given this evening at the Boston City Club with about sixty officials and salesmen connected with the Dodge Bros. motor car organization in eastern Massachusetts present. The dinner was given by the Henshaw Motor Co., Boston dealer, to celebrate the completion of the sales campaign that ended Dec. 30 after a run of thirty-nine business days and in which the salesmen of the Boston office and of the Henshaw Co.'s branches in Worcester, Lynn

and Brockton participated. Gold watches were given to the winners as prizes.

The winners are: New car division—first, W. L. Shepard; second, H. C. Henderson; third, C. M. Whelden; branch division—first, C. A. Galloupe, Lynn; second, C. F. Mussey, Lynn; used car division—first, Joseph Weeder; second, J. S. Murray. G. C. Hubbs, assistant general manager at Detroit, spoke. He said, among other things, that the salesmanship campaign resulted in the largest November and December business in the history of the Boston dealer and exceeded even the very large gain recorded in the previous ten months of 1916 over the corresponding period of 1915.

A three-reel motion picture called "Breaking Down Barriers," was given a private view in the club auditorium following the dinner. This film deals with the exploits of the Dodge Bros. car which made a preparedness tour of New England last summer, visiting each state and scouting the northern border. The car also participated actively in the mobilization of the Massachusetts troops at Framingham, being used by the adjutant general and other officers.

ERROR IN GAS PUMPS LESS

Milwaukee, Wis., Jan. 6—Wisconsin's gasoline consumption during 1916 was 40,554,150 gal., or 811,083 bbl., according to the annual report of the Wisconsin state oil inspection department, the state department of weights and measures and the state dairy and food commission, collaborators. During the year state inspectors found 12 per cent of the automatic pumps in the state inaccurate. In 1914 the error was 17 per cent.

D'ALENE FORSAKES NO. 13

Los Angeles, Cal., Jan. 6—Upon leaving the hospital, where he was taken after the car he was driving in a match race against Cooper and Pullen at Ascot park, Christmas day, overturned, Wilbur D'Alene asserted he never again would drive a car bearing No. 13. D'Alene used that number, which has been abhorred by all other racing drivers, throughout his 1916 season, and insisted on having it painted on the Omar, which he drove at Ascot, a few minutes before the start of the race.

ASCOT RACE FEBRUARY 22

Los Angeles, Cal., Jan. 5—The final race of the southern California winter season is scheduled for Washington's birthday, at Ascot park. Eddie O'Donnell, who has been here for several weeks, is expected to be one of the entrants. Cooper, Pullen and D'Alene will be among the other starters. The management is trying to arrange to bring one of the big stars of the sport, who now is in the east, here also. Barney Oldfield, who has not driven in contests on this speedway, is expected to have his new speed creation ready to try out by that time.

Empire State Truck Fees

Commission Recommends That Rate Be Advanced to Bring Greater Revenue

In Some Instances the Increase May Be as Much as 1400 Per Cent

NEW YORK, Jan. 5—If the report filed by the special truck fee commission of New York is acted favorably on by the legislature commercial vehicles will have to pay from two to fourteen times as much as the present rates. Those with combined weight of truck and load of two tons or less will have to pay \$10, double the present fee, and the fees increase until at fourteen tons a truck would be charged \$70, or fourteen times the present fee, which is a flat yearly fee of \$5.

Motor buses would pay more also, seating capacity being taken as the basis for payment here. With seats for five or less the charge would be \$15; for between twenty-seven and thirty, \$67.50; with intermediate prices for intermediate capacities. As it is the motor bus in New York pays a yearly tax of \$781 in state and city registrations fees, franchise for use of streets and personal property corporation taxes.

If the schedule is approved it will go into effect Feb. 1. The 1916 legislature gave the commission power to fix taxes, but there is some question as to the legality of the power. Hence, the approval of the legislature is necessary. The theory on which the schedule is based is that of injury to roads, the policy followed appearing to be that if a two-ton truck does so much damage a fourteen-ton truck will do seven times that much damage and,

The weight alone is considered, no account is taken of speed, number of wheels, kind of tires and so on. Motor buses are classified according to seating capacity, and the argument put forward by opponents of the schedule is that in no way does the schedule take into account the actual wear and tear on roads.

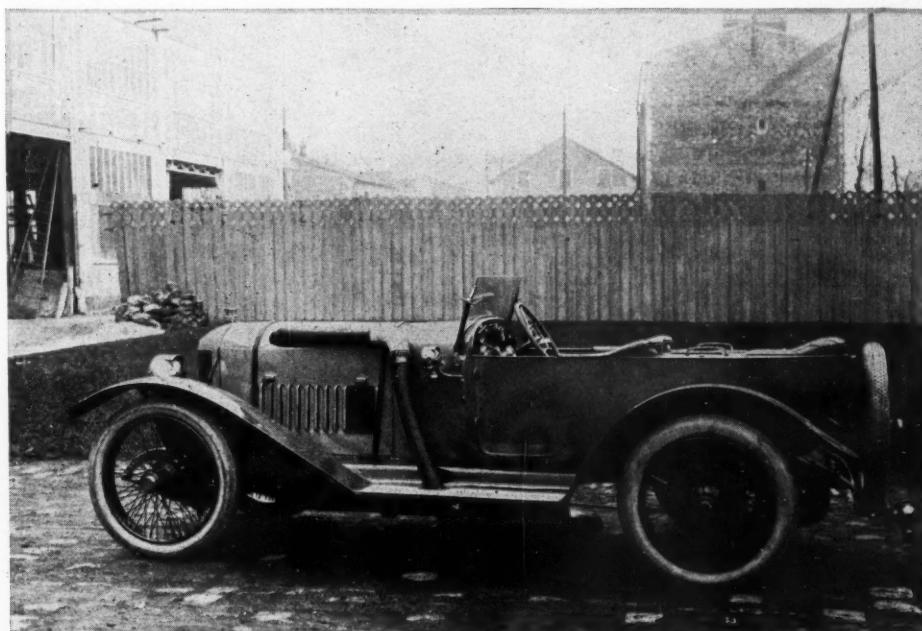
The truck fee commission was formed May 19, 1916, under an amendment to the New York highway laws as follows:

"And in fixing such fees the commission shall classify such motor vehicles upon the basis of the time and extent of their use of the public highways and their relative wear and tear of the public highways by reason of their use thereon."

The commission consists of Edwin Dufey, highway commissioner; W. W. Wotherspoon, superintendent of public works; and Frank M. Williams, state engineer. Provision is made that vehicles registered after Aug. 1 in any year will pay only half the yearly fees. Vehicles with seating capacity for more than thirty are to pay \$2 for each passenger seat in excess of that number in addition to the \$67.50. Trucks with weight of more than fourteen tons are to pay \$10 for each ton in excess of that number in addition to the fee of \$70.

MINNEAPOLIS STOLEN CARS

Minneapolis, Minn., Jan. 6—The summary of the year's work, made by the retiring superintendent of police, states that nine out of every ten cars were stolen. About 901 of the 1009 cars stolen since Jan. 1, 1916, were recovered by the motor car branch of the detective service. The total value of all cars stolen is placed at \$2,000,000. Half the cars were taken for joy-riding alone, and were found in the outskirts.



Famous racing car in retirement. This Delage was built for and run in the 1913 French Grand Prix at Amiens. In 1914 it secured third place, driven by Guyot in the Indianapolis 500-mile race. It has recently been equipped as a fast touring model.

Milwaukee Chief Against Semaphores

Favors Hand Signal as Against Mechanical Devices and Whistles—
Downtown District Parking Is Taboo, Vehicles Being Allowed to
Stop Only to Take on or Discharge Passengers from 6 A. M. to
7 P. M.—Regulations in Other Cities.

"ANY movement for the standardizing of traffic in all cities is to be commended and I hope ultimately to see this accomplished." This statement represents the thought expressed by John T. Janssen, chief of police of Milwaukee, Wis., when asked by a staff representative of MOTOR AGE for an opinion as to the feasibility of applying the traffic rules of William Phelps Eno, as advanced by MOTOR AGE, to all cities. "The Eno system does not differ materially from the rules in force in Milwaukee," Chief Janssen declared. "Fundamentally our regulations are word for word like those published in the September 28 issue of MOTOR AGE. I do not understand that these rules were given with the thought that every city could apply them in their entirety. I do not believe any ordinance that would be sufficient for the largest city could be applied to the smaller cities, as a whole, nor those that would fit the smaller city be adequate for the larger municipalities.

Semaphore and Whistle Taboo

"Every city has its own individual problems, but there are many instances where certain rules could be made standard and fit equally well in all cities."

Chief Janssen does not favor the use of either semaphore or whistle by traffic

officers. No semaphores are used in Milwaukee for directing the flow of traffic, and none are likely to be, so long as Janssen is chief of police, and he has been in that position for nearly thirty years and has studied the traffic problem to bring about a better solution as new phases have come up with the growth in number of motor cars using the streets.

"I do not believe the semaphore serves any useful purpose," the chief declared. "Let me give you an instance where I believe the semaphore would bring about congestion of the worst kind. Suppose the traffic officer sees a situation that to his mind means an impending accident. Is he to leave his post and exercise his power to prevent it, or stay at his post and operate the semaphore? If he leave his post, then traffic will proceed in the direction indicated by the semaphore while all other is held up. I believe more is to be accomplished in the way of eliminating traffic congestion by the use of hand signals than by the semaphore or whistle. We do not use either in Milwaukee and I believe the consensus of opinion here is against both."

Parking Not Allowed

The question of parking cars in the downtown district of Milwaukee has been

solved, not by establishing a time limit a vehicle may stand on the street, but by prohibiting its standing at all except to take on or discharge passengers. Citizens of cities that are allowed a half hour or an hour privilege of parking in the business district of their city find plenty of time to complain, but what would they do in Milwaukee? To extend the privilege of parking for a limited number of minutes on certain streets is only to invite violation of the ordinance, for many will try to stretch the time. Milwaukee seems to have reached a solution of the problem by ruling cars off its business streets altogether when it comes to parking, but it makes an exception after a certain hour in the evening, when a car may stand on the restricted streets any length of time. Ultimately, this may be changed, according to the chief.

Motorists Do Not Object

Asked how the motorists of the city looked upon the parking ruling, Chief Janssen said they had had the rule so long now that they have become used to it and there is little complaint. For violations of the traffic rules, Chief Janssen is very much in favor of penalizing. He does not believe lecturing an offender to be nearly so efficacious as a fine. Violations of speed laws are few, according to the chief. The limit is 15 m.p.h. except in the business district, where the speed must be sufficiently low for safety. Motorcycle police in Milwaukee do not wear uniforms and Chief Janssen expressed himself as believing they served their purpose fully as well as they would if in uniform.

Milwaukee has rules for governing the course of pedestrians on its streets. This has largely prevented jay-walking. This ruling is effective on certain streets only, but is in force at all street intersections where traffic is especially heavy to make diagonal crossing dangerous. The question of whether or not such traffic is heavy enough to prohibit diagonal crossing is determined by whether or not there is a traffic officer on duty at the crossing. For violation of this rule the first time a fine of \$1 is imposed and for each succeeding offense, \$5 plus costs. Default in payment of fine calls for imprisonment in the county jail until penalty and costs are paid, but not for a longer term than 30 days. The plan has been very effective in eliminating accidents on the streets.



"Half of This Road Is Yours, the Other Half Mine"—This big sign greets the eye of the motorist on the ten-mile stretch of asphalt-macadam road between Asheville and Weaverville, N. C., which is a link of the Southern National highway from Washington to San Diego. This sign is located at the city limits and is a reminder that others have rights on the road.

Duluth Adopts Eno System

DULUTH, Minn., Jan. 5—Chief of Police R. D. McKercher has joined the national movement to standardize traffic rules.

He has just prepared a list of rules to govern local traffic and copies are being distributed to car drivers throughout the city. The chief praises MOTOR AGE for inaugurating the movement to standardize traffic rules, from which publication he obtained most of the regulations.

Here are Chief McKercher's traffic rules for Duluth:

"Streets are primarily intended for vehicles, but drivers must exercise all possible care not to injure pedestrians.

"Pedestrians should, first, avoid interference with vehicular traffic and to this end not step from the sidewalk without first looking to see what is approaching; second, cross street at right angle, preferably at a crosswalk; third, stand on the sidewalk or close to the car tracks when waiting for car; fourth, face the front of the car when alighting and observe the traffic on the right before moving to the sidewalk, and, if passing behind a car, observe traffic in both directions.

"A vehicle meeting another shall pass to the right.

"A vehicle overtaking another shall pass to the left and not pull over to the right until entirely clear of it, except in overtaking a street car, when it shall pass to the right if space permits.

"A vehicle turning into a street to the right shall turn the corner as near the right-hand as practicable.

"A vehicle turning into a street to the left shall pass around the point of intersection of the two streets.

Cross Walks and Safety Isles

"Cross walks on main streets should be marked.

"Isles of safety are preferable on wide streets.

"Safety zones are very practicable in business districts.

"All traffic signs should be uniform and of the same color.

"Drivers of cars should always signal other traffic, so that there will be no uncertainty as to what they intend to do.

"One-way traffic is advisable on very narrow streets.

"At circles, where several streets converge, a vehicle should pass around the circle to the right.

"A vehicle should keep as near as practicable to the right-hand curb, so as to leave the center of the street clear for overtaking traffic—the slower the speed, the nearer the curb.

"A vehicle on a street divided longitudinally by a parkway, walk, sunken way, viaduct, isle of safety or cabstand, shall keep to the right of such division.

"A vehicle shall not back to make a turn if it obstructs traffic, but go around the block or to a street wide and clear enough for the purpose.

"A vehicle shall not follow another too closely for safety.

"A vehicle shall not stop with its left side to the curb, except in a one-way traffic street.

"A vehicle waiting in front of a building shall promptly give way to a vehicle arriving to take up or set down passengers.

"A vehicle, except where parking is allowed, shall not stand at an angle backed up or head-on to the curb, except while actually loading or unloading, and if horse-drawn and with four wheels, the horses shall stand parallel with the curb, facing in the direction of the moving traffic.

"A vehicle, unless a street car, shall not stop in any street except near the curb and then so as not to obstruct a crossing or sidewalk, except to allow another vehicle or pedestrian to cross its path.

"A vehicle overtaking a street car stopped to take up or set down passengers shall slow down and not approach within ten feet of the car while it is stopped.

Right of Way

"When in the performance of duty, the following vehicles shall have the right of way: United States mail, police, fire, ambulances, military, bureau of buildings and emergency repair of public service corporations.

"A vehicle in front of a street car shall turn out immediately upon signal.

"A vehicle shall not so occupy any street as to obstruct traffic.

"A vehicle on the approach of fire ap-

paratus, shall stop so as not to interfere with its passage.

"A vehicle's driver when slowing or stopping shall give timely signal by hand or whip, or in some other unmistakable manner.

"A vehicle's driver when about to turn either from a standstill or while in motion, shall give timely signal by hand or whip or in some other unmistakable manner to indicate the direction of the turn. This is especially important when turning to the left.

"Holding the hand straight out from the driver's position is an indication that a turn is to be made toward the side nearest the driver. Circling the hand in either direction indicates a turn toward the opposite side from which the driver is sitting. Closed cars present another question and it seems probable that mechanical signals of some description are necessary where the driver's compartment is entirely closed.

"A vehicle before backing shall give ample warning.

Lights and Sound Signals

"A vehicle shall be equipped with lights and sound signals as prescribed by law.

"Sound signals are prohibited except for necessary warning.

"A vehicle shall not exceed the rate of speed established by law and shall proceed with great caution, especially in making turns, in crossing other streets and crosswalks and in passing other vehicles.

"A vehicle's use is prohibited when so constructed, inclosed, equipped or loaded as to be dangerous, retard traffic, or prevent the driver from having a view sufficient for safety.



Half mile beyond the sign shown on the opposite page at a sharp curve around the rocky bluff, a big sign on which is painted a skull enshrouded in black, with "Just Around the Curve" underneath, involuntarily brings the driver to slow speed. These unique signs were designed by Charles H. Neal, county road engineer, and erected by the county authorities, at the request of the Asheville Motor Club

More Tire Companies Advance Prices

Republic, Fisk, Michelin, U. S., Swinehart and Firestone Announce Increases

NEW YORK, Jan. 8—Three more tire companies have joined in the general price increases inaugurated last week by nine of the large producing companies. Increases range from 4 to 25 per cent. One of the companies has lowered its prices on tubes.

A feature of the increase is that Ford size tires have not been raised as much as the unusual and standard sizes. In a majority of cases the increases on Ford sizes have been held down to 10 or 12 per cent. The unusual sizes average 15 per cent higher and the standard sizes from 15 to 20 per cent.

The Republic Rubber Co. has announced an advance of 15 per cent on tire casings, and 10 per cent on truck tire casings. The Michelin company has advanced prices on its tubes 10 per cent. On its plain and non-skid Ford tires, 30 by 3 and 30 by 3½ it has made an advance of 12 per cent. An advance of 19 per cent is also made on all shoes ranging in widths from 4 to 5 in., this increase also affecting the 34 by 4 shoe.

The Fisk company is the first to announce a drop in tubes, the decreases ranging from 35 to 50 cents a tube. For instance, the 34 by 4 grey tube, formerly \$3.60, is now selling at \$3.50; the 36 by 4½, formerly \$4.60 is now \$4.30; and the 37 by 5, formerly \$5.50 is now \$5.25.

A comparison, showing the different price increases on Ford, unusual and standard sizes is shown in the following table:

Name	Ford Size	Unusual Size	Standard Size
Republic	30x3½	32x3	36x4½
Old	\$16.50	\$16.25	\$39.05
New	19.00	18.70	44.15
Tube—			
Old	3.10	2.80	5.85
New	3.40	3.10	6.45
Michelin	30x3½	34x3½	36x4½
Old	\$16.95	\$18.30	\$35.70
New	17.50	20.95	42.25
Tube	30x3½	34x3½	36x4½
Old	\$3.35	\$3.85	\$6.90
New	3.55	4.35	7.55
U. S. Tire	30x3½	32x3	36x4½
Old	\$12.75	\$12.50	\$30.10
New	14.80	13.90	35.45
Swinehart	30x3½	34x3½	36x4½
Old	\$20.60*	\$25.90	\$44.10
New	no change	no change	no change
Plain tread—			
Old	17.50	22.50	\$37.50
New	16.15	21.05	38.20
Tube	30x3½	34x3½	36x4½
Old	\$3.40	\$3.75	\$6.05
New	no change	3.80	6.60
Firestone	30x3½	32x3	36x4½
Old	\$14.70	\$14.75	\$35.35
New	16.40	17.15	40.65
Tube	30x3½	32x3	36x4½
Old	\$3.20	\$3.05	\$6.20
New	3.55	3.45	6.90

* On non-skid.

HORN IS NAMED WARNOLA

Chicago, Jan. 5—The motor car warning signal to be made by the Warnola Mfg. Co., New York, has been named Warnola. A prize of \$25 was offered in an advertisement running in MOTOR AGE, the *Automobile* and *Motor World* once only in October, and the name was chosen from those submitted in answer to the advertisement. Arthur Hirshon, an advertising man with the Ewing & Miles Advertising Agency, New York, was the successful contestant among 4300 in all. The judges were: Har-

vey Adams, Auto Supply Co.; James A. Abeles, Motor Car Equipment Co., and Ray W. Sherman, *Motor World*, all of New York.

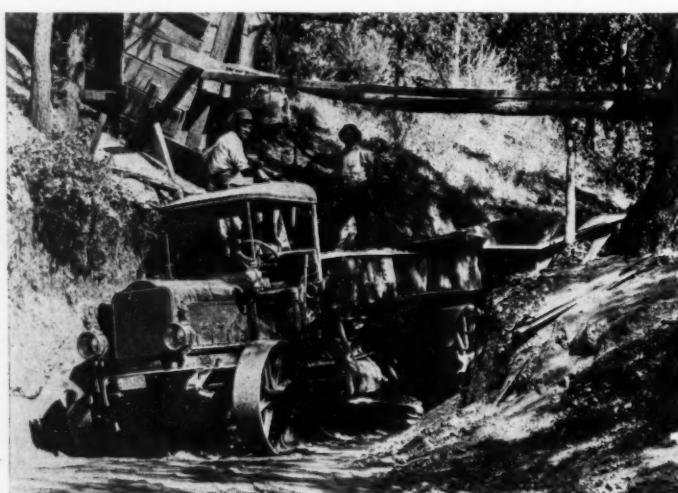
A variety of names was suggested. A large division began with the word "auto," and the word "bugle" appeared about 200 times. Many combinations of the words "clarion" and "clear" were made. Because the horn has two reeds, giving two distinctive notes, the words "dual" and "duo" also were mentioned. The melodious tone possessed by the horn brought forth the word "mellow." "Safe" and "safety" were close favorites with "triumph" and "trumpet." The new signal will be advertised as "The Warnola" and as "The Warnola Horn."

OFFICIAL CARS RESTRICTED

St. Louis, Mo., Jan. 9—The City Board of Estimate and Apportionment, which passes on all municipal expenditures, has given notice that all motor cars bought for the use of city officials hereafter must come within a \$650 cost limit. The limit was first placed at \$500, but Mayor Kiel suggested that this would restrict sales to practically two cars, and on his motion the limit was raised to \$650. There are eighty-nine cars in the city service, the highest priced costing \$6,200. The average cost is estimated at \$1,000.

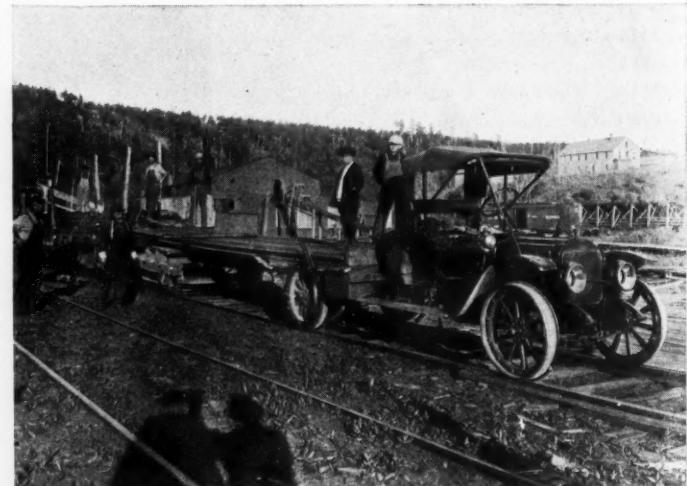
HAYNES RECOVERS STOLEN CARS

The bane of the Automobile industry is the automobile thief. Resistance to his pernicious activity has been mostly confined to dealer and customer, and now a number of manufacturers are coming forward to make an effort to stop his operations. The motor car manufacturer has at his command his organization of dealers and accessory



WHITE TRUCK ON YEOMAN DUTY—The A. A. Haskins Dolomite Co., San Francisco, Cal., that owns the largest mine of pure dolomite in the United States, aggregating over 3,000,000 tons, is using a White good roads truck and a 5-ton trailer to haul 40 tons of dolomite every 24 hours from the mine to the nearest railroad siding, a distance of 10½ miles. Exhaustive experiments made by this company prove that the truck and trailer is the only practical outfit that enables the mine owners to transport this quantity of mineral at the lowest possible cost.

Steel mills making steel by the open hearth process, use dolomite



as a flux. It is also calcined to make lime and plaster. The gas, a by-product, is used for charging soda water and other carbonated drinks. The residue, after being hydrated, makes an everlasting lime for making plaster ornaments, stucco work, etc.

The road from the mine to the railroad is one of the worst roads for hauling to be found in any part of the country. It is full of chuck holes and 8 miles of very crooked mountain road is covered with a fine dust 6 to 8 inches deep. There are steep, sharp turns with grades from 8 to 10 per cent and 1½ miles long, making the task of hauling a very difficult one.

makers, and this, when put in play, forms a network that promptly entraps the thief and identifies his theft.

Although it has not been generally known, the Haynes Automobile Co., Kokomo, Ind., has maintained an organization of this kind for the benefit of its owners for several years, and the system has a notably successful record of recovered cars to its credit. The Haynes owner is advised to notify the company immediately upon loss of his car, giving motor number and serial number of equipment.

As soon as the Haynes company is in receipt of this information, it sends letters to all dealers in the United States and Canada advising them to be on the lookout for the car, and to hold the driver, in the event the car can be identified. At the same time the makers of equipment are informed of the part numbers on the stolen car, and asked to wire any information that may come in correspondence in regard to the equipment parts.

KORBEL ENTERS ROLAND AGENCY

New York, Jan. 8—Edward F. Korbel, who has been press agent for the New York show for a number of years, has entered another field. He has been elected vice-president of the Roland Advertising Agency, 1790 Broadway, and will handle all this concern's motor car accounts. The new position will be in addition to his other work.

GASOLINE BALLOON HIGHER

Minneapolis, Minn., Jan. 6—Three successive advances have raised the price of gasoline in the Twin Cities and Duluth from 17½ cents Dec. 1, 1916, to 19½ cents Jan. 2, 1917.

Bloomington, Ill., Jan. 6—Gasoline is 18½ cents a gallon here, the price advancing 1 cent the first of the year. This is the highest price in a year and is 3 cents higher than on Aug. 1.

Denver, Col., Jan. 5—Two 1-cent increases within a week have sent the retail price of gasoline to 23 cents in Denver and vicinity, and oil company officials predict a further rise in the next ten days. The wholesale price to filling stations and garages is 21 cents, and the tank-wagon price direct to consumers in 25-gal. lots is 22 cents.

Milwaukee, Wis., Jan. 5—Milwaukee gasoline distributers on Jan. 4 announced a further increase of 1 cent a gallon in both wholesale and retail prices, bringing the so-called low test grade up to 19.6 cents a gallon, filling station, and 18.6 cents a gallon, tank-wagon basis. All other grades also were advanced 1 cent. This is the third raise of 1 cent since Dec. 1, 1916. Dec. 8 prices were advanced 1 cent a gallon, and a similar raise went into effect Dec. 19.

Will Build Trego Aviation Motors

Newly-Formed Springfield Motors Co., Will Operate on \$5,000,000 Capital

NEW YORK, Jan. 8—Frank H. Trego's large V-type aviation engines will be built by the Springfield Motors Co., just organized under the laws of Delaware with a capitalization of \$5,000,000, composed of 500,000 shares of common, par value \$10 each. The company has been organized for the purpose also of building with trailer platform and connection and has contracted for the purchase of the Knox Motors Co. plant in Springfield, Mass., together with equipment, patents, etc., including the Knox 300-h.p. aeroplane motor recently designed by Mr. Trego, and one of the largest engines ever built in this country.

The Knox Tractor manufacturing will be continued. The Knox Motor Associates have developed an addition to the ten-ton tractor, a unit for use with a touring car for hauling 2 to 3 tons. This unit is an internal gear drive, rear axle with trailer platform and connection and replaces the rear axle and tonneau of the touring car. The price is \$150.

Official Personnel

H. G. Fisk, treasurer of the Fisk Rubber Co., has become president of the new company. E. C. Morse, vice-president and general manager of the Chalmers Motor Co., is vice-president. F. H. Trego is vice-president and in charge of works; and Gerard Roberts, attorney in this city, is secretary-treasurer.

The directors consist of H. G. Fisk, E. C. Morse, F. H. Trego, Gerard Roberts, E. S. Kelly, formerly chairman of the board of directors of the Kelly-Springfield Tire Co., Robert Boettger, secretary of the Selas Co., a director of the Silk Finishing Co. of America and president of the Yonkers Trust Co., and J. J. Cone, vice-president of Robert W. Hunt & Co., engineers.

Winslow & Co., this city, are the subscription agents. Subscription books are

now open and shares may be subscribed for at par, \$10 per share.

CLEVELAND HOLDS BIG EXHIBIT

Cleveland, Jan. 6—More than 80,000 people visited the sixteenth annual show, which closed today. More than 400 cars were sold at retail, while the wholesale business amounted to more than \$1,000,000. The exhibition was at the Wigmore Coliseum, where 46,000 sq. ft. of floor space was used for displays and 20,000 sq. ft. for aisles. Every foot of display space was filled completely by the forty-six exhibitors who displayed 220 cars.

N. O. T. TOUR SOON

Kansas City, Mo., Jan. 5—As soon as the weather will permit a party of motorists will drive to Kansas City from Pueblo, Colo., over the National Old Trails. Motor car owners in Pueblo are anxious to get a hard road built from Kansas City to that place and will come here to confer with local car owners and various civic associations for the purpose of securing co-operation along this line.

LATINS LIKE LOUD COLORS

Latin-Americans go in for loud effects in motor car colors, having no fondness for the conventional hues which predominate in the United States. The motor car companies have made this interesting discovery. South Americans, Cubans and Porto Ricans all appear to prefer bright-colored cars, judging from special orders sent to car factories.

A few days ago a certain factory shipped eight cars to Havana. One was a seven-passenger touring car in violet-purple, with white wire wheels and a Victoria top. All the others were finished in somewhat flashy colors. One was a light red, with black wire wheels.

TEXAS USES MORE TRUCKS

San Angelo, Tex., Jan. 5—Motor truck lines for the transportation of all kinds of freight between the more remote points of western Texas, where railroads are few, are now in regular service. The longest is between San Angelo and Sonora, 72 miles. The use of motor trucks on the ranches of Western Texas is becoming quite general. Many of the larger landed properties which are 20 to 50 miles from the railroad find that the transporting of cotton seed cake and other feed stuff for their cattle can be done more economically by trucks than by animal-drawn wagons. Some of the more remotely located farmers also are using motor trucks for hauling their grain, hogs and other products to the shipping point and taking back supplies.



A mascot of the English sector in France

Truck Success Under Difficulties

Mack Model Transports 10-Ton Load Up Steep Mountain Trail in 12 Hours, Despite Accident



This is the position of the truck and its load after the roadbed collapsed. The entire weight was held by the axle of the left rear wheel. The truck was a 3½-ton Mack.

THE truck did the job in a little more than 12 hours; any other method would have taken more than 7 months. This is proof positive that it paid to use a truck when the time came to transport a steel casting for the base of a 100-inch telescope that is being constructed on the summit of Mount Wilson near Los Angeles.

However, those 12 hours need explaining. Not that any time has been deducted in giving that number. Nothing of the kind. For the 12 hours is not even actual running time. It would have taken some 5 or 6 hours less time if the accident had not happened.

Load Was Too Unwieldy

For 2 years now the construction of this immense observatory on the top of Mount Wilson has been going on. Located as the summit is, 9 miles from the bottom of the mountain, the problem of transportation is no small one. But various loads had been carried up the trail without mishap, some heavier even. The unwieldy mass of the steel casting did the mischief.

The weight of the truck's load was 20,185 pounds. A Mack truck of rated 3½-ton capacity was being used. When within $\frac{1}{4}$ mile of the summit, the roadbed collapsed beneath the tremendous strain of the heavy load, and the three men who were riding on the truck jumped for their

lives, expecting the truck and casting to be thrown down the mountainside. The spectators nearby scurried for safety. A precipice extended from the road down into a canyon 2 miles down the side of the mountain. Half a dozen pleasure cars, loaded with sightseers, were on a section of the road 50 feet below, and their danger was too evident.

But the truck did not turn completely off the road, and the instant's panic was followed by action. A block and tackle quickly was rigged from the top of the casting and moored to a cluster of scrub oaks on the mountain. In this way the truck was relieved of some of the strain. The rear wheels were jacked up, and 4 feet of planking were inserted beneath the rear right wheel, which hung over the edge of the road.

Five hours later the engine was started and under its own power the Mack resumed its work and completed it in safety.

This 10-ton load was not the heaviest that has been taken up the Mount Wilson road, but it was the most difficult to handle. A year ago, eight enormous castings were delivered at the summit. Two of these were steel girders 24 feet long. J. A. Stoner, who drove the Mack, also was at the steering wheel on the former trips, but upon those occasions he used a 6½-as though only a fly. He fell 11 feet to

ton Saurer truck for the work. Mr. Stoner is the Southern California manager for the International Motor Co., builders of Mack and Saurer trucks.

Rains Caused Accident

The section of the telescope that was so close to disaster was mounted on the truck in an upright position. It stands 11 feet 4 inches high and is 11 feet across. The Mount Wilson trail is 9 miles long from the toll gate at the bottom to the one at the top. It is 4 miles from the lower gate to the plant of the Carnegie Institution in Pasadena and $\frac{1}{2}$ mile from the upper gate to the observatory. The average gradient is 12 per cent with several pitches of 18 per cent and one, at a hairpin turn known as the Devil's Elbow, of 20 per cent. The trail has been hewn out of the mountain and was designed as a one-way road with frequent turnouts. Recent rains had rutted it and softened it along the outer edges. It was because of the soft condition that truck and load came so near to being lost.

When the start was made from the lower toll gate, two men were on top of the load to raise the telephone wires that cross and recross the trail. One of them failed to dodge a wire in time and was brushed off

the base of the section and marvelously escaped death or serious injury.

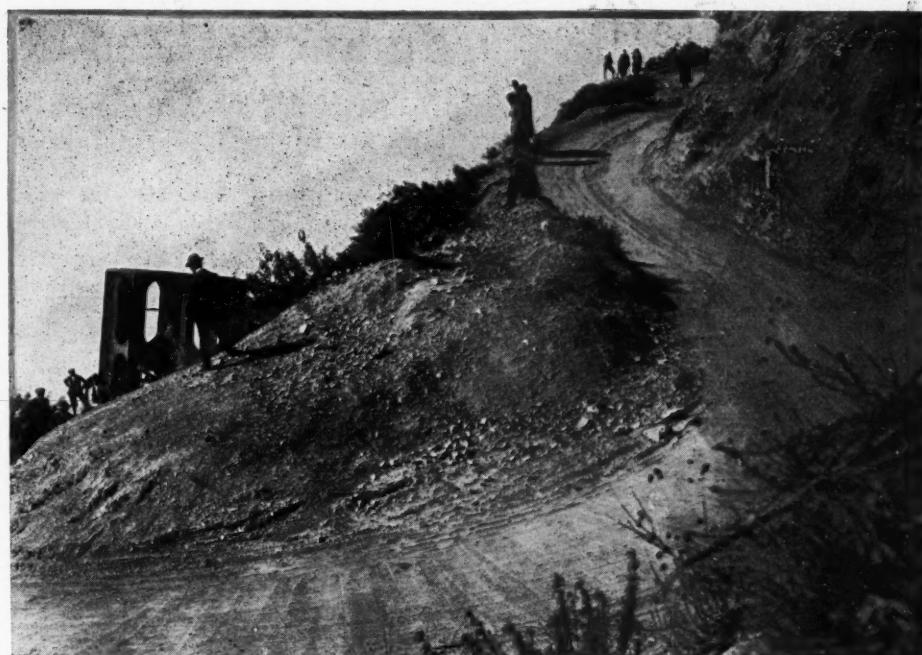
The narrowness of the trail threatened to bring ruin on a number of occasions. The load would not clear the sides of the mountain at times and another truck was hooked on in front. With the combined power of the two, the load was hurled against the solid rock crushing tons of granite down. Stops to remove this debris from beneath the wheels were frequent. Telephone poles were broken off or splintered to kindling wood, and great hunks were gouged out of trees that grew close.

Wooden Pattern Cleared Sides

Two days before the steel casting was taken up, the truck made the trip with a wooden pattern. On that occasion the load was put flush against the driver's seat, and it cleared the sides easily. But when the real load was put on the truck in the same position, it was found that so much weight on the front wheels made it impossible to turn them in steering. The load was set back 5 inches, and that accounted for nearly all the difficulties encountered. Even then two men frequently pulled on the steering wheel, while four or five others tugged at the front wheels of the truck in making some of the turns.

After the accident, when the truck was again upright, the treacherous blocking beneath the rear wheels would not permit any power, and it was necessary to use another truck and restore the truck to the solid road by means of block and tackle with twenty men on the rope.

The Mack truck was standard in every way with a gear ratio of 29 to 1 on low. It was operated under a governor that limited the motor speed to 1,000 revolu-



The stretch coming into Devil's Elbow, a hairpin turn and a 20 per cent grade. The trail is planked at this point. It was necessary for the truck to back and fill several times here

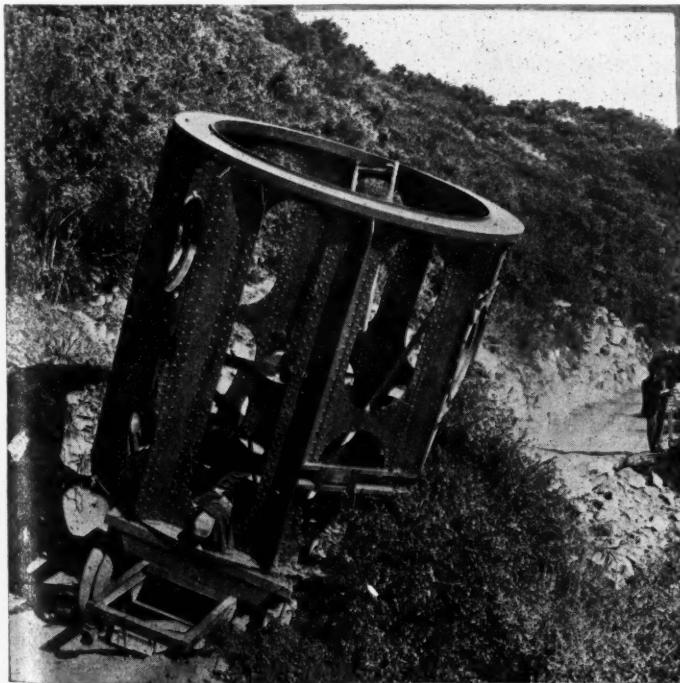
tions a minute. It was estimated by observatory attaches that had a donkey engine been used to snake the load to the summit, the only other practical way, it could have been advanced at the rate of about 200 feet a day. Despite accidents and delays, the truck accomplished the task in a little more than 12 hours.

DEALERS IN BACK-DOOR TRADE?

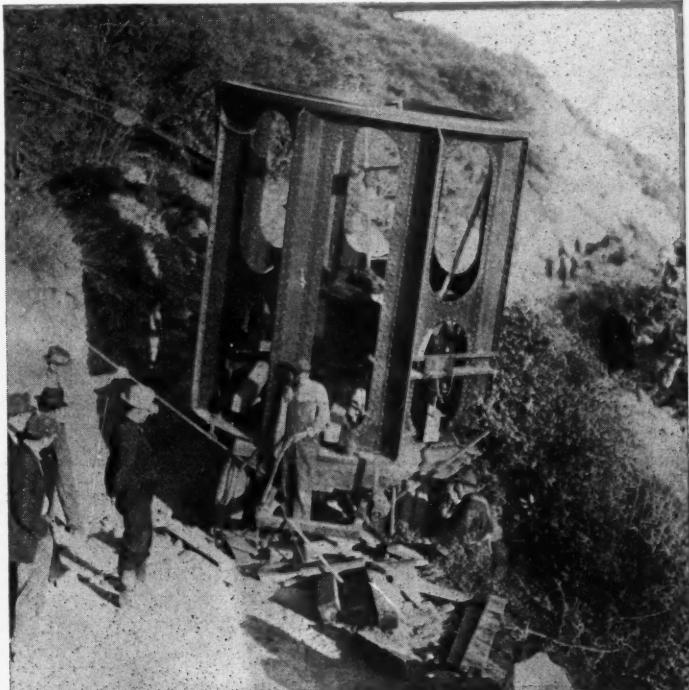
Los Angeles, Cal., Jan. 6—Garage operators in the San Joaquin valley region of California, who have been accustomed to dealing in accessories, are reported to be organizing quietly for the purpose of buying

their supplies from wholesalers and jobbers who do no retail business. Practically all of the big wholesalers on the coast have announced a wholesale-only policy, but this does not seem to satisfy the garage men, who claim a back-door business is being done.

When asked about this, one of the proprietors of a large establishment said the garage men do not know what they are talking about. He claimed that houses like his have to do some business for the sake of friendship, etc., that is against their wishes, but they cannot get out of it.



When it looked as if all were lost, everybody broke for safety, except the moving picture man—at the extreme right. One man was riding on top of the ladder within the casting



*The rescue work shows the right rear wheel resting on 4 feet of blocking. Block and tackle at the top helped relieve the strain
The slope here falls 12,000 feet down a canyon*

Local Traffic Ordinances Denied

Judge Rules State Provisions Supercede Municipal Regulations in Suit

LOS ANGELES, Cal., Jan. 6—What is said to be the most far-reaching judicial decision rendered in California in relation to motor vehicle laws and the traffic question was handed down here by Superior Judge Finlayson, when he refused to permit local traffic ordinances to be introduced in evidence in a suit involving a motor car accident.

The judge recited as his opinion that it was the intention of the state legislature that the state vehicle law should regulate traffic on all public highways and that the use of the streets is not a municipal affair. This conforms to the previous ruling of the district court of appeal that cities, not under free holders' charters, have no power to pass ordinances regulating traffic. In municipalities governed by charters, said the court, the only ground on which traffic ordinances could be passed by city councils is that the regulation of traffic is purely a municipal affair.

While the supreme court has held that the opening or paving of a street, being a local improvement, is a municipal affair, Judge Finlayson declared that the highways are open to the free use of all citizens of the state as well as of the municipality; that a citizen of another city has equal rights on the streets of Los Angeles with those of this city and that therefore, the city charter is not paramount to the state laws and that the state laws, not city ordinances, shall prevail and be enforced by the municipalities through their police power.

Motor Age Influence

Such a ruling will probably result in the agitation for uniform traffic laws, undertaken by MOTOR AGE, having a strong influence in California. Whether the Eno system, which is similar to the one prevailing here is adopted throughout the state or not, some uniformity is bound to come out of the confusion. All cities and towns will have to be governed by the same general laws, so that the stranger, when once he has become acquainted with the provisions in any place can safely continue his journey elsewhere. El Monte cannot have a ten-mile speed limit, Ontario, twelve, Azusa, fifteen and so on with variations innumerable, but all must conform to the state regulation.

Judge Finlayson also made other very important rulings as to the law in this state relative to the liability of a car driver and Pedestrian. He is:

If the windshield of a motor car obstructs the view of the driver by reason of drops of rain collecting on it, or, if the driver is blinded by a light from

ahead or reflected from his own windshield, it is his duty to stop at street crossings.

"BORROWERS" ARE WARNED

St. Paul, Minn., Jan. 6—The first bill introduced into the house of the Minnesota legislature this year was a measure amending the general laws of 1913 and providing severe punishment for motor car "borrowers." Any person who "takes, removes or operates any motor car from the place where left by owner or person in charge

Price Increases

DETROIT, Jan. 9—Prices of the Maxwell truck have been changed so that the chassis sells for \$795 instead of \$775, and the body styles are additional as follows: Box body, \$55; express body, \$95; panel body, \$105.

PRICE OF MAJESTIC IS \$1,650

New York, Jan. 8—The price of the Majestic car produced by the Majestic Motor Co., 1790 Broadway, is \$1,650, the new list having been established too late to be included in the issue of Motor Age for Jan. 4.

HAYNES RAISES CAR PRICES

Kokomo, Ind., Jan. 6—The Haynes Automobile Co., this city, has increased the prices on all four of its models for 1917, effective Feb. 1. Model 36, the six on the 121-in. chassis, and model 40, the twelve on the same chassis, have been increased \$110, and model 37, the six on the 127-in. chassis, and model 41, the twelve on the same chassis, are now \$140 higher.

INTERSTATE INCREASES PRICE

Muncie, Ind., Jan. 9—The Inter-state Motor Co. increased the prices of its product Jan. 1 as follows: Five-passenger touring, \$75, to \$925; Standard roadster, \$25, to \$875; Chummy roadster, \$55, to \$950; divided seat touring car, \$45, to \$950. The delivery car price of \$850 is unchanged. The company also has a touring sedan at \$1,325.

HARVEY TRUCK PRICES UP

Harvey, Ill., Jan. 9—The Harvey Motor Truck Co., formerly known as the Harvey Motor Truck Works, has been incorporated for \$300,000 and announces new prices for its product as follows: 2½-ton, \$2,500; 3½-ton, \$3,250; 5-ton, \$4,000. The 2½-ton chassis takes the place of the former 2-ton truck. Officers of the company are William E. Dee, president; Simon R. Dee, vice-president and treasurer, Bert B. Fornaciari, secretary and general manager.

shall be deemed guilty of a felony and upon conviction shall be sentenced to the state prison or county jail for a term not exceeding three years, or be fined \$2,000, or both." The bill is the outcome of a custom of defense that there is intention of returning the machine, and of no actual theft.

REMY IGNITION ON AUBURN 6-39

Auburn, Ind., Jan. 8—The Auburn 6-39 is equipped with Remy ignition instead of Delco, as mentioned in the December 28 issue of MOTOR AGE in the table of electrical equipment on 1917 cars.

PERFECTION HEATER FOR FORDS

Cleveland, Ohio, Jan. 6—The Perfection heater model designed for Fords has been reduced from \$15 to \$10 owing to the great increase in the volume of production. The company plans to make \$25,000 during the year.

BIG TRUCK-FORMING DEAL

Chicago, Jan. 9—Within a few days announcement of the consummation of a deal between the Redden Motor Truck Co. and some large industrial corporation whose name is withheld at this time will be made, whereby the Redden company will be refinanced and proceed with its business of making truck-forming attachments on a materially larger scale. The incoming corporation is said to be now in control of motor car, tire, axle, spring, forging and rolling mill factories. The new concern will obtain the Cook patents, under which the Redden is built. The distributing company will continue to be known as the Redden Motor Truck Co. and C. F. Redden will be retained as president and general manager.

PARTS SHOW NOT SUCCESSFUL

Cleveland, Ohio, Jan. 6—The first separate accessory show to be held in the motor car industry closed tonight in this city and the situation can be summed up only in the statement that the show was not a success. It was operated entirely separate from the regular motor show across the street and it was necessary for show visitors to pay two separate admissions if they cared to attend both shows. The result was that while thousands attended the car show, few went to the accessory show. This seems to indicate that the public will not pay money to attend a purely accessory show.

Since accessories are closely allied to cars and are always considered as an adjunct to the car business, it is the belief of trade leaders here that an accessory show cannot be a success unless it is made a part of the car exhibit. This is taken to mean that when the accessory show is held in a separate building as was the case here, one admission should cover both shows. With this arrangement the show visitor

would pay for admission to both exhibits when he bought his ticket and naturally would feel inclined to use both sections of it.

There were eighty exhibitors in the accessory show. The proposition was promoted by the people in the M. & M. Co., an accessory house, and the attendance was very unsatisfactory to the management.

ENGER IS DEAD

Detroit, Jan. 9—F. E. Enger, president of the Enger Motor Car Co., Cincinnati, is dead. Mr. Enger, who was reported to be one of the wealthiest men in Cincinnati, and who recently formed the motor car concern that bears his name, with a capital stock of \$3,000,000, shot and killed himself at the factory office. He was in ill health for several months.

FORD SMELTER MAY OPERATE

Detroit, Jan. 8—Henry Ford, Horace H. Rackham and Frank L. Klingensmith furnished a \$10,000,000 bond last Saturday which was accepted by the court, to indemnify the Dodge brothers against the loss of any part of the \$58,000,000 surplus assets of the Ford Motor Co., which they wish distributed in the form of special dividends. The hearing before Wayne County judges resulted in the order which allows the Ford company to proceed with the River Rouge smelter project which entails an outlay of \$12,000,000.

HUPP CAR NEAR FINISH

Detroit, Jan. 8—The Hupmobile capital-to-capital car is nearing its final destination, Washington, D. C., and will attempt to reach New York during the show.

NEW FACTORY AT CANTON

Canton, Ohio, Jan. 8—Arthur Holmes, formerly vice-president and chief engineer of the Franklin Motor Car Co., and C. H. Rockwell, former sales manager of the Franklin company, have combined with western capitalists and formed the Holmes Automobile Co., which they have incorporated for \$2,500,000. The company will make air-cooled engine motor cars, and will erect a huge plant in this city. Temporary offices have been opened and temporary manufacturing quarters obtained pending erection of buildings.

SELDEN HAS FORD UNIT

Detroit, Jan. 8—After 18 months of exhaustive experiments, the Selden Mfg. Co. has begun an active, countrywide campaign to introduce the Samson load carrying unit. Its function is to relieve the Ford rear axle of all weight from load when the chassis is converted into a light truck, and to supply a powerful, rigid brace to the Ford spring hangers and wheels. This is accomplished by two strong brackets with their auxiliary springs, and two special ball bearings which assemble on the axle housing.

G. M. Subsidiaries Cancel Charters Seven Concerns Cease Working Under Old Incorporation and File New Papers

DETROIT, Jan. 8—Seven subsidiary companies of the General Motors Co. have canceled the charters under which they have been operating and have filed new articles of incorporation with the secretary of state in Lansing. The incorporators for each company are W. C. Durnat, T. S. Merrill and H. N. Rice and the capital stock of each is \$10,000.

The companies reincorporating and the authorized capital stock of each under the earlier incorporation are: Buick Motor Co., Flint, \$2,600,000; General Motors Truck Co., Pontiac, \$250,000; Jackson-Church-Wilcox Co. of Saginaw, \$250,000; Northway Motor & Mfg. Co., Detroit, \$1,000,000; Oakland Car Co. of Michigan, Pontiac, \$800,000; Olds Motor Works, Lansing, \$4,000,000; Weston-Mott Co., Flint, \$1,500,000.

General Motors, in order to affect greater economy in operation, took over Jan. 1, the entire manufacturing operation of those companies in which it heretofore owned entire capital stock as holding company. These companies, which have been incorporated for ten thousand each, will be sales companies for products manufactured by various manufacturing divisions of General Motors. There will be no change in management nor manufacturing operations of any division. All subsidiary companies are now known as divisions.

COLUMBIA MOTOR AMENDS

Detroit, Jan. 8—The Columbia Motors Co. has filed amendments to its articles of association with the county clerk. The amendments were made at a meeting of the stockholders held in this city in October, and were arranged to permit the company to manufacture and assemble from any kind of metal, wood or other material, or combinations of materials, any and all kinds of castings, implements, tools, fixtures and machinery and any other articles of commerce ordinarily made in a machine shop or foundry. It was also arranged by an article of amendment that Detroit be made the principal place of business in Michigan.

FEDERAL TO MAKE NEW TRUCKS

Detroit, Jan. 8—The Federal Motor Truck Co. shortly will begin the manufacture of two new trucks of 1-ton and 5-ton proportions. Mechanically, they will be somewhat similar to the present 3½-ton truck which the company has been manufacturing for the last three years, and the 5-ton model will include the worm-drive rear axle, heavy motor with five-bearing crankshaft of nickel chrome steel, force-feed lubrication operated at a pres-

sure of 150 lb., feeding all bearings including the piston wrist pins. Complete specifications have not yet been arranged and will be announced at a later date.

CROWTHER PRODUCTION TO BEGIN

Rochester, N. Y., Jan. 5—The Crowther-Duryea Motor Co., this city, is about to begin the manufacturing of its cars. One hundred cars, it is stated, are being assembled at the present time at the factory in Ridgeway avenue.

DETROIT FIRM IN LAND DEAL

Detroit, Jan. 9—A land purchase involving \$250,000 was made last week in Milwaukee by a Detroit motor car concern, the name of which is not known at this time. It is reported that the company making the purchase will open a large plant in Milwaukee and will employ several thousand men. The land bought comprises 188 lots and 35 acres along the right-of-way of the C. M. & St. P. railroad.

TO CENTRALIZE TRACTOR PLANTS

Chicago, Jan. 6—Montgomery Ward & Co., Chicago, purchased the plant and good will of the Field-Brundage Co., maker of gasoline engines at Jackson, Mich., and will move the entire outfit to Springfield, Ill. The new industry will be added to the Racine-Sattley plant in Springfield. Montgomery Ward plans to centralize in Springfield the manufacture of all kinds of tractors and gasoline power machinery controlled by them, and the purchase of the Sattley Plow Co.'s plant last July was the initial step in this program. A hundred additional men will be employed to manufacture gasoline engines, varying in size from 1 to 25 hp. Plans for new buildings are now under way.

DELAWARE'S MOTOR LEGISLATION

Wilmington, Del., Jan. 8—At the session of the Delaware legislature, which will get down to business in a week or so, an effort will be made to secure some motor car legislation. Among other things, there will probably be a bill requiring all vehicles using the roads at night to carry lights. There will be another to prohibit constables and other officers collecting fines for alleged violations of the law without adjudication before a magistrate, who will be required to ascertain the facts at a hearing, unless a plea of guilty is entered, and then the magistrate will collect the fine. Of course, these are only tentative plans, but they are about in shape for presentation to the legislature.

Germany Improves Its Truck Design

Commercial Vehicles Are Stronger but Lighter, Due to Electric Types Gain—New Batteries Features

WHILE passenger car design has made comparatively little progress in Germany since the outbreak of the war, motor truck construction has been greatly improved and the scope of both gasoline and electric commercial vehicles has been considerably widened. Strength and light weight are the features which most impress one in inspecting these machines, both being due to the need for economy in both construction and operation and to the use of lighter materials such as steel-reinforcement, frames, hydraulic spring systems, instead of steel spring suspension, and similar innovations.

Electric Current Is Cheap

The number of electric trucks has been greatly augmented, the ever-present necessity for economy being partially responsible for their popularity since current is unusually inexpensive, due to the abundance of coal Germany is mining from the northern section of France occupied by its armies. Highly efficient batteries of a new type have been developed because the demand for lead by the munitions factories rendered lead cells out of the question and the scarcity of nickel in Germany prevents the extensive use of the nickel-iron type. Gas batteries in which slightly acid water is decomposed by the current entering into oxygen and hydrogen are said to be used in large numbers as reserve sources of current in stationary plants. When the oxygen and hydrogen is released from compression in the cathode and anode spaces through reduction valves they again combine as water, liberating current to the amount originally absorbed in the process of decomposition.

While gas obtained from distilled coal constitutes a large percentage of the motor vehicle fuel used in the interior of the German Empire, gasoline is used almost entirely in military operations. The Germans consider their gasoline supply, at least sufficient for the needs of the army, to be secure for an indefinite period.

There are not many instances which illustrate so well the change industrial Germany has undergone during the last 2 years as the motor car situation in the interior of the empire. For life in general does not differ so very much from that in a normally operating country; the number of able-bodied men in the streets is considerably above what outsiders would imagine and the people are fully as busy as in times of peace.

However, the moment one leaves a home, store or factory and enters the street, the abnormal condition of German existence

By E. A. Langdon

becomes evident, for there is an absurdly small number of passenger cars, and what there are consist of old, invalid hacks—vehicles which nobody would think of using in normal times—and at the same time there is a very great number of commercial vehicles, but these, too, are of an entirely different type from what was seen before the war. Let us consider both of these phenomena.

Passenger cars, like all things which are not a matter of absolute necessity, have become utterly negligible in German eyes—principally because they had to. The military operations at the front could easily employ all passenger cars German and Austrian factories could turn out, and more; and the absolute subjection of individual interests to those of the state has resulted in the drafting into service of every car which is at least 40 per cent efficient. These cars are used for the extremely rough work which frontal operations necessitate; and the result is that every part of the car suffers, though not in equal degree. Some of these machines, as has been described in a former article, are overhauled in field vehicle hospitals, of which there are several at each front, and by this expedient the life of each car is increased, on an average, by 100 to 200 per cent. However, finally the time arrives when the car can no longer be kept serviceable in this fashion, and when, in times of peace, it would be consigned without mercy to the junk heap. In war, however, the junk heap is merely the assorting department for the materials needed by the divers factories of the empire. Hence, these unserviceable cars are taken to one of the enormous plants handling this work of assorting waste materials—there are, in all, five such plants in Germany and Austria, employing in all close to 80,000 persons—where they are taken apart and segregated.

Some parts of these disassembled cars with slight chemical treatment can be used over in assembled cars which are continually being built for service at the front; other parts are put aside to be melted and entirely refashioned; whereas a minimum quantity of parts is always placed aside and used in the makeup of the passenger vehicles, police and ambulance wagons which are absolutely necessary in the interior. It stands to reason that these latter classes of vehicles are of a lamentable kind, most of the time entirely devoid of any design, and built rather along lines

of expediency than of harmony or looks.

As for trucks, the difference between the importance given to them and that allowed for pleasure cars is most striking, for commercial vehicles are not only, without exception, harmoniously and suitably designed, but every one gives a decided impression of strength, coupled with light weight. The latter point is the result of two conditions; first, the necessity of economizing all sources of energy; second, the use of lighter materials than were the vogue before the war. These lighter materials include spruce frames stayed by steel braces, as well as combinations with other principles of construction. It is surprising to an observer not accustomed to these types of vehicles what strength can be obtained by these means, if proper weight distribution is had by suitably designed braces and stays and if the suspension is ample. German engineers are not tempted to false economy in this latter regard.

Hydraulic Spring System Used

Hydraulic spring systems, often including a set of different-sized cylinders arranged in suitable series to take gradually varying shocks, have become very common during the last 2 years. Some of these hydraulic shock absorbers, which, by the way, have almost completely taken the place of steel springs on commercial vehicles, are not working on the principle of internal friction in the liquid or between the liquid and arduous passages, but are so constructed as to utilize the resistance of the container against an outward radial stress, whereby advantage is taken of the full tensile strength of the metal.

In regard to economy of energy—the word "fuel" being purposely avoided in this instance—the number of electric trucks has increased enormously ever since the outbreak of the war, and is still increasing, for all purposes where motor cars are used on good roads; and, generally speaking, all roads in the industrial sections of the empire are good. Electricity is one of those many commodities the production of which is now under governmental supervision, but current is surprisingly cheap; the explanation being, very likely, that the Germans are deriving great quantities of coal from the mines in the territory held in France. In many cases, where numerous trucks travel along fixed lines of transportation, as between industrial centers of moderate distance—railroads being used chiefly for purely military passenger and freight transports—the

vehicles are propelled by single or double electric motors in place on the rear axles, current being drawn from overhead conduits by means of a trolley.

Apropos of these conditions, it is interesting to note that a great many lead batteries which served as reserve sources of current in stationary plants have been supplanted by an entirely different type of battery, as lead is needed in the making of ammunition. These novel batteries are said, in a number of cases, to be of the gas type, wherein water with a slight acid percentage is decomposed by the current upon entering, is stored in cathode and anode spaces in form of oxygen and hydrogen, being compressed there by suitably designed mechanism, and when the battery is drawn upon, the gases leave from their chambers through reduction valves in proper proportions and again combine to water, freeing the amount of electricity first absorbed in the decomposition of the liquid.

Platinum Powder for Battery

The poles of this battery are faced with "Platinmohr," black amorphous powder of platinum, which is at once a good conductor of electricity and a good catalyzing agent, being used to a great extent in the making of sulphuric acid, one of Germany's most important industries. The use of this material for batteries show how the industries of the empire have become linked, and, as it were, reshaped along lines of "interchangeability of parts." The sulphuric-acid industry has been drawn upon for much of the platinum used there and is now using in place of the platinum method, a new kind of "contact process," as they call it. This is only another illustration of how, so to speak, not a molecule of matter is lost within the empire, no matter how great a quantity is shot and burned away at the battlefield.

The fuel of the cars used at the front consists almost exclusively of gasoline, and the reason for this is that hundreds of thousands of soldiers are well familiar with the operation of gasoline engine and average motor cars, as well as with the chief points of its construction; consequently the risk of the personal equation is smaller in the case of the average gasoline car than if any other type of vehicle were used. Moreover, the Austrian oil fields in Poland, the wells of the occupied Russian territory and what oil and oil products were imported from Roumania heretofore are ample for the requirements of the field cars, and the more perfect organization developed during the war has quite overcome the need of using industrial alcohol, or benzol, for that matter.

One of the difficulties experienced by German engineers lies in the terminals of spark plugs. Platinum, used solid or as a coat, is absolutely unobtainable, as Russia, the chief former source of supply, is now of course shut off, save for small quantities which find their way into Ger-

many via Sweden, or which were taken from craft captured in the Baltic. The Germans have been working on an "Ersatz," or substitute, for some time, and while it is not used generally as yet, engineers claim to obtain surprisingly fair results therefrom. They are, of course, very secretive about the matter, but from what the writer could learn, in a vague manner here and there, it would seem that the substitute is an alloy of gold and a metal of the radium group, very likely uranium. Some experiments made with a selenium compound, or rather alloy, are also said to have been fairly satisfactory, except for the variable conductivity of this element which changes with the degree of light or radiation to which it is exposed; which fact caused fluctuations and disturbances throughout the ignition system of the car and led to the abandoning of the idea.

One peculiar innovation was witnessed by me some time ago when visiting the western front. It was a cylinder head made of a material which resembled wire-reinforced glass, and, it was stated, was indeed of a similar composition, namely, an oxide of silica made in one of the chemical factories along the Main and reinforced by a skeleton of steel wire. The valve seats, made of nickel steel, are put in place when the head is being made and still at a very high temperature. These cylinder heads are, except for the connecting ways to the manifolds, without jackets; small wire points protrude from the inner wire skeleton and are cooled by the stream of air directed upward by the inclined fan.

While the French and English armies use thousands of cars fitted with wire wheels, the Germans have practically departed from their use, principally because the empire's enormous lumber reserves permit of easy and cheap wholesale production of good wooden wheels, while every metal is comparatively scarce and economy is necessary. The metal which has been less subject to this rule than any other seems to be aluminum, for which new uses are found every day and which is produced very cheaply by the electric furnace process.

The aluminum powder, or Thermite, process of welding has also become of tremendous importance, and the equipment for this process forms part of every car containing the repairshop equipment needed for quick repairs of motor cars and trucks. These traveling shops contain a simple but complete outfit for welding, a lathe, punch, a small drop forge and a full set of minor tools, so that almost any repair can be made anywhere and at any time, the necessary power being furnished by the motor of the repair wagon. These traveling repairshops are, moreover, fitted with wireless telephones and small generators geared to their motors, so that they can easily and immediately get into communication with the nearest motor depart-

ment of the army to which they belong. The crew consists of three men, each one an expert driver, mechanic and electrician.

Every kind of labor which is connected with the driving and repairing of cars is plentifully supplied to the army. The boys between 17 and 19 years of age are trained in the school, with a view to preparing them for military service when they reach the full age, and from among those showing mechanical ability and inclination the future car operators are picked. These are trained by experts, not only in driving, but in repairing every conceivable kind of accident or damage, as well as first aid to the injured; so that in all likelihood Germany will possess, when the war is over, the greatest number of motor vehicle expert drivers among all countries in Europe, which will make these young men vastly superior in earning power and serviceableness to what they would have been without this training.

Drivers Are Picked Carefully

Wherever possible, the drivers are chosen from the soldiers knowing the language of the enemy the particular army is in contact with, so that if by accident they come into possession of military information they are in a position to report it with the greatest possible speed to their superiors. A stranger would be most surprised to note the high percentage of intellectual men, engineers as well as students of medicine, languages and theology, among the contingent of cars attached to the German army.

While the construction of cars as heretofore mentioned, has become much simpler, no desirable accessories are spared to make operation efficient. For instance, spring types of self-starters are almost universally used where hand cranking is not retained; and speedometer, thermometer and barometer form part of every vehicle's equipment; the same thing may be said to hold true of the trench periscope, a vertical tube with inclined mirrors at each end, and about 6 feet long; a small heliograph, detailed map, compass, etc.

There is no doubt that when the war is over, the motor car industry of Germany will emerge as something reborn and as far advanced over what it was before July 31, 1914, as it was at the latter date over 1900, both because of the improvements and developments made during the war and on account of the practical annihilation of most draft animals, except what specimens were reserved for stock breeding. But there is little likelihood of the German peasant ever turning to horses again for his agricultural work. What he will look for will be a moderately-priced, highly-reliable, simple, efficient car, which can be rapidly transformed into a tractor. For such a machine Germany will offer a wonderful market, because, in spite of the empire's enormous industry, agriculture is still one of the two greatest, if not the greatest, method of occupation of the German people.

From the Woman's Viewpoint

Fur Is Premier

HE was quite an Angora cat, was Angelo. He had multi-ply fur extensions of a bright, yellow-orange that made him the cynosure of all eyes, both human and dumb animals, especially when he adorned his owner's motor car, and that invoked a doubt as to the wisdom of the leopard's adoption of spots to make his yellow coat harmonize with his environment.

Daily he swelled in his pride, for his owner's car was in dark tapestry in order to show his own fittings off more completely, and much note was made of his comings and goings.

Daily he grew more kittenish in his prancing after the elusive fluffy appendage to his coat—this was an entertainment he put on when in the mood while waiting for his owner to return to the car from some shop. A snug look came over his face, and he had a slightly snobbish air continually.

His Fur Praised

"What a wonderful fur!" some passerby would exclaim as Angelo and the car were seen.

Angelo always heard these apt remarks, and he grew prouder and prouder until those whom his car was seen by began to say what an extraordinary large cat he was and how thick his fur must be, and make other impolite, personal remarks of the kind. It was a dull life at the most, this being a motoring cat. Besides, he was like other great characters—he thought 'twere better far to have quantity rather than quality of comment, if that was all one could get.

He was surprised—and shocked—to awake to the realization one day that the women folks of the house were engaged busily in looking at pictures of furs and talking of garments of fur. He thought it was an awful waste of time when they had the living image of fur perfection right before them, but of course he couldn't say so, and they continued to waste time.

Not long after this abrupt arousal to the lack of economy in his immediate household he overheard a group of visitors discussing the fur situation. At first he thought it was to his gifts that they alluded, but alas, no! They mentioned fox and wolf and skunk and rabbit and mole and nearly everything else but Angelo.



A cape fit for a king and a sample of what causes fur talk

And they wondered which kind of fur was best for motoring; if this was too heavy and bundlesome if you drove; if one needed fur anyway in the inclosed car; and so on. Angelo never did quite catch the drift of the game. Were they seeking furred beings to admire? Then, why look farther? Did he not have a wonderful fur, and was he not one of the best motoring accessories made? Hadn't he heard these things time and again?

He heard of the long shoulder capes, "So

Angelo Is Sad

handy, my dear, because you know the lap robe really makes a long fur coat unnecessary!" They had trimmings, not being of the superior excellence of his coat, which needed no addition, though it did have the aforesaid fluffy appendage. Some of the capes, he learned, reached quite to the waist and had long, flat ends which crossed fiehu-like and added height to the silhouette. Skunk, kolinsky, mole and lapin were popular for them. So that was it? Fur rivals? He must look into this matter and see what strangers were bringing these revolutionary ideas into the neighborhood.

For Light Coats

He deduced from the conversations in the air that long coats of cloth or velvet with half-linings of fur could be worn in place of the usual sable or astrakhan if the woman found the staples too heavy when she was driving or using the limousine with its heated interior. These coats were worn circular in form, moderately wide, with skirt very low on the hips and long, as in the sixteenth century.

He heard that three bands of fur might do as well as a broad cuff; that the wide, loose neck effect could be obtained best with the lighter furs; that there was a tendency to edge the Russian blouse with fur of some description, rabbit, for instance.

He heard that three bands of in Russian surtont effect were individual and unusual; that they fell full, with skirts that reached to the ankles and had sharp flares from the waists; that they resembled those of the Russian acquaintance greatly; that fox was a good fur for the collar of the ermine warp.

He learned that no fur was too common to be desirable; that a coat lined with the white-flecked hide of a deer was too dainty to hide; that, in short, most anything that could be passed for fur would do.

All of which he took in with the greatest of ease, though with a feeling of pity that they should turn to these lesser things when the yellow-orange of his coat flaunted itself before the whole world. The climax came when he drove quietly down Main with his owner one afternoon, his glory



This coat is said to have fur trimming only

showing in pleasant contrast against the sober sides of the inclosed car.

"Oh, wouldn't that eat make a lovely red fox set of furs?" some one cried.

This was too much. Angelo has been disgusted with furs ever since.

Feminine Motor Notes

Suede cloth is recommended as a good material for touring. Not only is it warm, but it is soft and pliable. The cloth can be made up in various ways. One of the most popular styles for long tours is that with the plain, full skirt and Norfolk or box coat.

Mrs. Ralph Earle of San Francisco is making an interesting trip now. She is with her husband on a 10,000-mile motion picture tour of the national parks in the interests of Pathé. The trip will last until the middle of spring. Their route is from San Francisco to Portland, Yellowstone, Glacier, Mount Ranier, Yosemite, General Grant and Sequoia. They will visit the Grand Canyon also. The trip is being made in a Buick roadster.

The colors of the Florida Federation of Women's Clubs, green and gold, have been adopted for the Ingraham highway, a road of about 85 miles stretching southward from Miami. To carry them out, palm trees and yellow flowering shrubs will be used

Beauty Hints for the Woman Motorist



No. 10

THE hands cause much motoring thought. They are subjects of more concern perhaps in winter motoring, for winter motoring stops often at the play, the opera or the dance. They are especially noticeable to the woman owner of hands that suffer from winter motoring. For attendance at play, opera and dance concentrates your, if not other, attention on the hands. You see women at the play and opera who have made an art of using their hands and, hence, of caring for them. No singer has reached the acme of her ability until she has added her hands as aids to her interpretation. Take the moving picture. That is the greatest criterion on hands perhaps, though fortunately for the actors and actresses with otherwise pleasing appearance scenes shift often and attention is not centered so much on detail.

But the motorist's hands are of most concern here. How can she keep them in good condition, even though she exposes them somewhat and finds they grow red with constant washing? An occasional washing in tepid water with a cold dash afterward is sufficient in some environments, but not in the open, and especially if that open is a smoky town or city. Too frequent use of hot water, however, enlarges the pores of the skin and makes the texture coarse. It eventually will cause the hands to become flabby and age rapidly. So care is needed here. A few simple aids for red hands will be suggested next week.

along the highway. Flowers officially approved for this purpose are the Allamanda, Yellow Lantana, Yellow Elder, Yellow Jessamine, Bignonia Venusta and other yellow flowering vines for forest trees.

The Willing Workers Club, a woman's organization at Avenue City, Mo., raised \$776 to spend on the Jefferson highway in that section. Later \$5 was subscribed to the highway. Through its efforts four larger wheeler scrapers were obtained for use in cutting down hills on the route.

The desert roads held no fears for Mrs. George F. Shelton, who left Chicago in a Buick Thanksgiving Day and arrived in Los Angeles Dec. 16. The only thing that seemed to worry her was the destruction

of signs along the roads. She advises protection by law, such as California gives highways in her state.

Mrs. Jennie McWilliams was selected by the mayor of Champaign, Ill., recently to take a census of the number of motor vehicles in the city so that the wheel tax ordinance could be applied properly.

Mrs. D. S. Robinson of Oregon chose the slogan for the Dealers' Motor Car Association of that state. It is: "Oregonians Motor All the Year."

Nearly 2,000 Atlanta, Ga., women run their own cars, and the traffic policemen say they are on the average safer and better drivers than the men. Eliminating trucks, one car out of every four that passes a certain point in the city has a woman at the wheel.

A skating compartment in which she may carry her skates en route to the rinks of the city distinguishes the Studebaker town car designed for Mrs. W. C. Graves of San Francisco. The stock chassis is fitted with a miniature boudoir, which contains even a writing desk.



This coat reverses the plan of other on this page, trimming its whiteness with a dark fur



Electrical Equipment of the Motor Car



By David Penn Moreton & Darwin S. Hatch.

Editor's Note—Herewith is presented a special installment of a weekly series of articles which began in Motor Age issue of June 29, designed to give the motorist the knowledge necessary to enable him to care for and repair any and all of the electrical features of his car, no matter what make or model it may be. At the conclusion of this series, "Electrical Equipment of the Motor Car," with additions, will be published in book form by the Class Journal Co., in a size to fit the pocket conveniently. It is expected that the book will be published about April 1.

Locating Common Starting and Lighting Troubles

NOTE—This is a second special installment of the series published at this time in answer to a number of requests from readers. When this material is published in book form, it will appear in different form in another portion of the work.

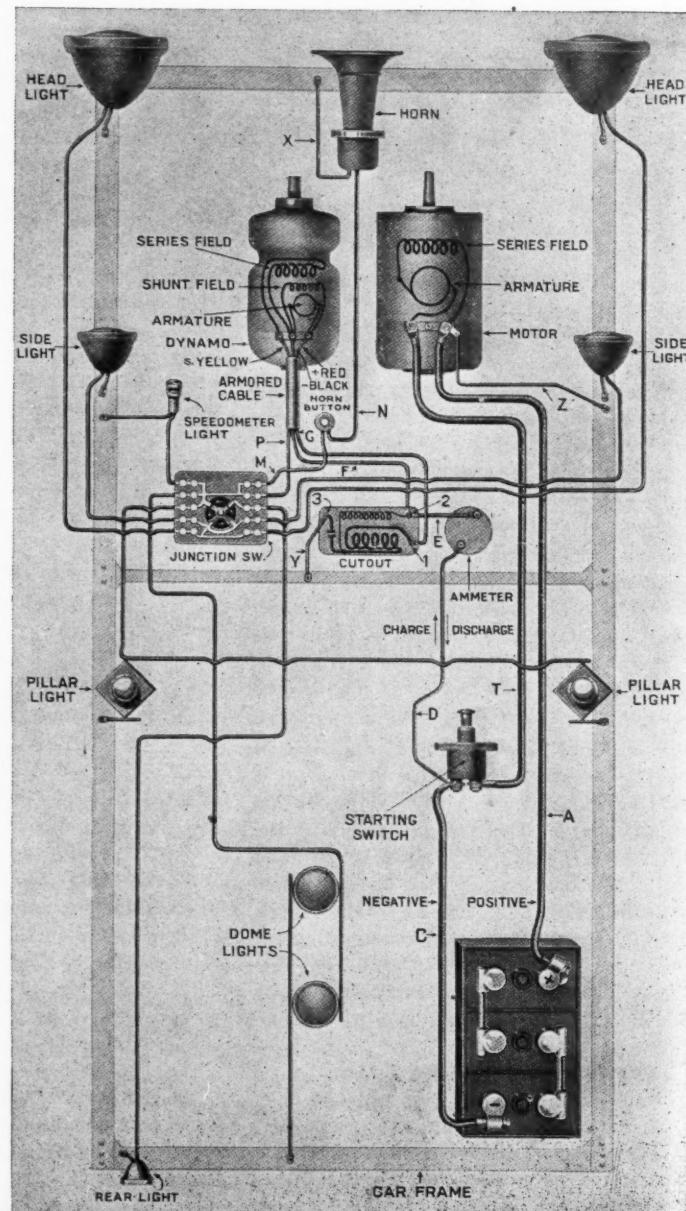
THE practical application of the short-circuit test may be shown by reference to Fig. 3, which is the wiring diagram of the Gray & Davis grounded system. Let us assume that the starting motor fails to operate and there is no indication that the circuit is closed, that is, the motor makes no attempt to turn when the starting switch is closed, which indicates a dead battery or an open circuit. The condition of the battery may be determined by applying the test points direct to its terminals and if the test lamp burns at full brilliancy the battery is not dead, but it may not, however, be fully charged. Now with test point P1 on the positive terminal, touch the other test point P2 to the terminal of the starting switch to which the wire C is connected, and if the test lamp lights the wire C is O.K. Next touch P2 to the terminal of the starting switch to which the wire T is connected, and if the test lamp lights with the starting switch closed the starting switch is O.K. Next move the test point P2 to the terminal of the motor where the wire T is connected, and if the test lamp lights the wire T is O.K. Now move the test point P1 from the positive terminal of the battery to the terminal of the motor where the wire A is connected, and if the test lamp lights, all connections to the motor are O.K. and the open circuit is within the motor and may be due to dirty commutator, worn out brushes, burnt out armature or burnt out field.

A separate battery may be used in testing for open circuit by connecting the lamp and battery in series. If a 110-volt direct-current or alternating-current circuit is available it may be used in combination with a high resistance (low candlepower), incandescent lamp and the testing points, in place of the separate battery and 6-volt test lamp. Care should be exercised in using the 110-volts in testing as you may burn out your lamps or cause a short-circuit through the ground, if the 110-volt system is grounded, by accidentally grounding the side of the testing circuit that is normally ungrounded.

How to Test for a Grounded Circuit

The majority of starting and lighting systems have in their normal condition of operation one or more grounds or connections to the frame of the car. Before testing any circuit for grounds which interfere with the operation of the car it will be necessary to first remove these normal grounds. This may be done by taking the wiring diagram of the system being tested and disconnecting all the indicated ground connections. A

Fig. 3—Wiring diagram of Gray & Davis system. The condition of the battery may be determined by applying the test points direct to its terminals. If the test lamp burns well, the battery is not dead, though it may not be charged fully



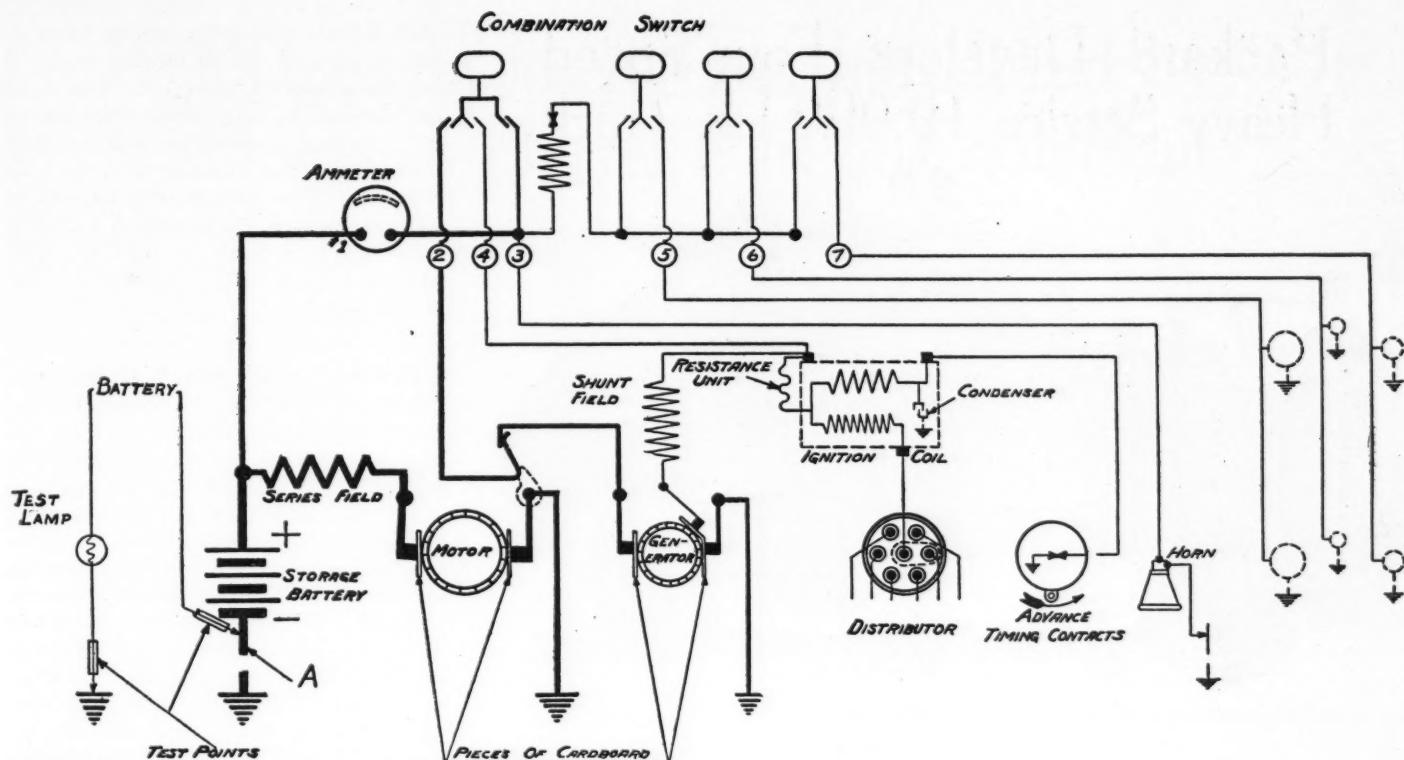


Fig. 4—All the normal ground connections have been temporarily rewound in the Delco system shown here, and various other changes have been made. Short-circuits may be tested by closing the switches one at a time with the test points connected

Delco system in which all the normal ground connections have been temporarily rewound is shown in Fig. 4. The negative battery lead has been disconnected, all the lamps have been removed, all of the generator and motor brushes have been insulated from their commutation by introducing a piece of cardboard, the ground connection on the horn has been disconnected, the leads from the distributor are disconnected, and the metal base of the ignition coil is raised so as not to make electrical connection with the top of the motor generator.

With the test points connected as indicated in the figure, and the switches all open a ground on the switch or motor windings will result in the test lamp lighting. Assuming there are no grounds on the motor winding or switch then the different circuits may be tested by closing the different switches one at a time with the test points still connected as shown in the figure. Should the test lamp light when any switch is closed it is an indication that there is a ground on that particular circuit which can be readily traced and remedied.

NEXT WEEK

The next installment of the series on Electrical Equipment of the Motor Car will resume the consideration of Electric Motors, taking up the types of magnetic fields

The New York Show Accessory Corner

(Concluded from page 28)

\$1.75. In addition a complete line of standard folding chairs is carried. Mc Kinnon Dash Co., Buffalo, New York.

Multometer Combined Usefulness

Something in accessories which is attracting unusual attention at the show principally because of its total newness to anything offered heretofore, is the Hamilton Multometer. It is an instrument designed for the accurate determination of tire mileage and gasoline and oil consumption, instruction for adjustment recorded every 500 and 1000 miles, a speed indicator with a 75 m.p.h. maximum and a trip and season mileage register, all on one instrument. It is really made up of thirteen odometers operated in sequence by a series of pawls which keep a continuous record of thirteen elements. The casing may be turned so that any of the odometers may be turned into view in the dial, or these

may be thrown completely out of operation. A single cable from the front wheels drives the pawls which, in turn, operate one odometer at a time. In the tire mileage part of the instrument there are six separate registers, for the four tires on the wheels and two spares. Gasoline may be registered with mathematical accuracy both for the season and the trip. The amount of oil consumed for trip and season is registered in a like manner. It indicates at a glance, necessary mechanical adjustments, oiling requirements and cleaning requirements. It is made by the Hamilton Corp., Lancaster, Pa., by the makers of Hamilton watches.

New Shaler Vulcanizer

There are twelve patches furnished with the new Shaler portable vulcanizer, and each is complete in itself, consisting of a patent heat unit held in a metal container

that also holds the patch of raw rubber. This heat unit together with the patch is held against the surface to be vulcanized by means of a screw clamp held in a U-shaped frame. Price, \$1.50, extra patches, 75 cents a dozen. C. A. Shaler Co., Wau-
pum, Wis.

Sparton Vacuum Feed

The new Sparton instrument is claimed to be the smallest, simplest and most efficient vacuum feed on the market. The tank, cylindrical in shape, holds about a quart. It is divided into two chambers, the upper for suction and the lower for discharge. A float operates the valves. Flow to the lower chamber is continuous through a flap valve and gasoline in this chamber is maintained at a constant level. It is said that the tank cannot be drained at high speed and that 5 sec. of cranking is enough to fill the tank when empty.

Packard Develops Four-Speed Heavy Service 10,000-Lb. Truck



Packard's new 5-tonner equipped with dumping body, the mechanism for which is driven by the motor

WITH the exception of a thermostatic water control, a four-speed gearset and a change-speed lever located in the center, the new series of Packard 5-ton trucks does not differ from the worm-drive model first introduced by this company. The 5-tonner sells for \$4,300 f.o.b. Detroit, with a full complement of equipment. There is a body for every need in this heavy service series, as it is named.

The new thermostat, which is the only deviation in the power layout of the car, is a device which gives a quick warm-up to the motor and regulates the heat automatically at the most efficient operating temperature. The use of this device will give more economical operation.

Adapted for Heavy Loads

The new gearset is especially adapted for the moving of heavy loads. There is an unusually low gear provided to give maximum tractive effort upon starting. Of course the four speeds mean that less time will be lost on hills through the wider choice of gears and the fourth speed, which is direct, will tend toward economy on smooth going. The gear-shift lever is now in the center instead of on the side. Electric starting and lighting have been provided.

All speeds are automatically governed with the maximum high speed at 11 m.p.h. If desired a special high-speed type can be secured with Sewell cushion wheels, having a speed of 13 m.p.h. Two lengths are furnished, the standard one of 13 ft. and a longer one of 15 ft. 6 in. The platform length is optional. Although there is a standard body the prospect will be furnished with prints of a variety of types for every use.

For those who are not familiar with the mechanical characteristics of this car, the

following points are among the salient ones: block-cast, L-head motor with 5 by 5½ bore and stroke, alloy-steel valves, concentric piston rings, drop-forged connecting rods, four-bearing crankshaft mounted on brass-backed bearings, horizontal web on crankcase casting to protect the carburetor and motor accessories from mud and water, helical-type spur gears to drive camshaft, pressed-steel tank of 27-gal. capacity under the driver's seat and combination of splash and pressure for lubrication.

PACKING FIBER DISCOVERED

Akron, Ohio, Jan. 5—The discovery of large deposits of long-fibered asbestos in the Sierra Anchas in Arizona is of interest to American manufacturers because of its availability for asbestos sheet packing. Before this 85 per cent of the asbestos used in the United States has been imported from Canada. The Goodyear Tire & Rubber Co., Akron, Ohio, is one extensive manufacturer that uses such fiber for asbestos packing, its product being known as Good-yearite.

FEDERAL FITTED FOR DESERTS

Detroit, Jan. 5—A Federal truck has been equipped by the California State Automobile Association for use in marking and scouting roads in the Coast states. It is fitted especially for desert roads. The running boards carry two tanks holding more than 40 gal., one of which is for gasoline and the other for water. A third tank extending from the frame on the left side will carry 5 gal. of oil. In this way provisions for the camel of the motor world are supplied fully.

The truck thus equipped can travel 600

miles without additional fuel or water as the car probably will be required to do. It will travel mostly through the mountains and deserts, seeking roads little known and little used, charting and marking them and reporting their conditions to the state motorists. Next year it will be used to mark as many of the unmarked highways and connecting roads of Northern California and Nevada as it is possible to cover in that time.

JEFFERY QUADS MAKE RECORDS

Kenosha, Wis., Jan. 5—Production of Jeffery Quad trucks is to be increased considerably, according to advices from the Nash Motor Co. factory. The records made in service have increased the demand greatly. An investigation shows more than 4000 in use daily in fifty-five lines of trade and in twenty-three different countries. The ability to steer on all four wheels and its general construction makes the truck able to travel through mud and sand alike. In the United States army it is used in the signal, aviation and marine corps and the quartermaster's department. The warring nations use it for various kinds of field service.

FUTURE BONUS ANNOUNCED

Milwaukee, Wis., Jan. 5—The Wisconsin Motor Mfg. Co. has announced an extra payment plan for all employees working on an hourly basis or on piece or premium rates. Those on the payroll Jan. 1 who continue in the employ of the company during the year will receive extra payments of 10 per cent of their total earnings for the year, distributed as follows: Two and a half per cent of the earnings for the first quarter; 5 per cent of the earnings for the first 6 months, less the sum previously distributed; 7½ per cent of the earnings for the first 9 months, less previous sums; 10 per cent of the earnings for 1917, less sums previously distributed. According to the plan, a worker getting \$50 a month would receive \$60 as extra payment for the year, provided he was with the company that long.

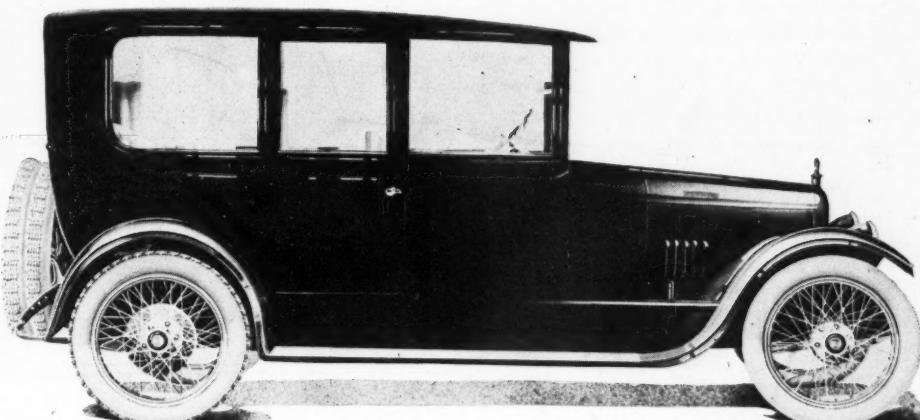
FRANKLINS AT 10,000 PER YEAR

Syracuse, N. Y., Jan. 5—Two hundred and fifty per cent increase in production of Franklin cars finds the Franklin Automobile Co. even farther from supplying the demand than before the added facilities were installed. In midsummer, cars were being built at the rate of 4000 per year. With the announcement of Series 9, at about that time, it was made known that buildings then under construction would soon make it possible to build 10,000 cars a year. With some of these buildings already in use, cars are coming through the plant at the rate of 150 a week and the 10,000-per-year schedule will be in full swing by Feb. 1.

Three Inclosed Cars Introduced by Jordan—Heater Part of Equipment

JORDAN cars are now available in limousines, coupes and sedans. In the design and production of these three models the Jordan policy of luxurious appointments has been adhered to to the smallest detail. In the limousine there is a surprising amount of expensive fitting for a car selling for \$3,000. The color is in unusual shades of blue or green.

The front seats of the limousine are trimmed in long-grained hand-buffed leather in full French plaits without buttons. The upholstery in the rear compartment is of expensive French tapestry, the pattern selected to harmonize. The woman occupant is appealed to with a clearance between the rear seat and the back which is wide enough so that big hats will not interfere. The seat is tilted for comfortable repose. The glass throughout is sashless with mechanical lifts except in the rear quarters which are provided with lace lifts. There are dome lights, rear corner reading lamps and running-board lights. To be found in the equipment are: Flexible cloth robe rail, toilet set, watch in the front-seat back, motor phone and an inclosed heating system.



The Jordan convertible sedan, which sells for \$2,350. A heating apparatus is part of the equipment

The custom-style sedan sells for \$3,350. In this body too there is space provided so that a woman's hat will not hit the back of the top. For interior finishing there is a choice of rich domestic upholstery or French tapestry. The lines are, of course, low as befits Jordan cars. The top is of the convertible type with windows which disappear for warm-weather driving. This model, too, includes a heat-

ing apparatus as part of the regular equipment.

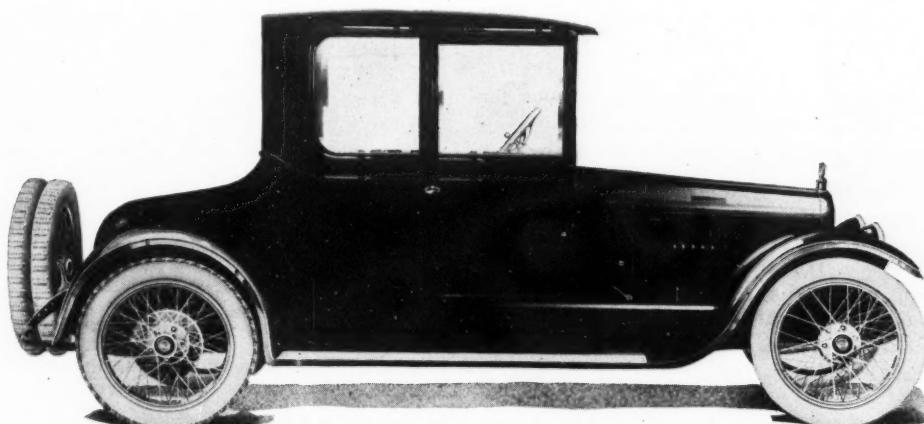
The coupe, listing at \$2,300, is a four-passenger job. The top is of the permanent type. The four passengers are seated with a staggered two-seat arrangement and there is a carrying compartment large enough for two suit cases and a traveling bag in the rear deck. Another smaller compartment behind the seats will accommodate small parcels, doctor's cases, etc.

SWEDEN'S MOTORING CONDITIONS

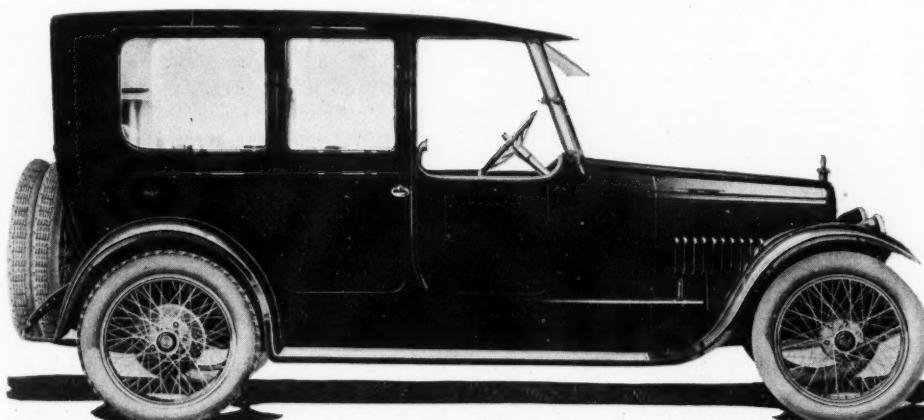
New York, Jan. 5—Sweden is a country naturally attractive to the motorist on account of its scenery and the macadam roads which wind and twist through the mountain and agricultural districts, but Sweden has been having trouble in getting supplies since the war began and of her 9000 cars more than half the taxicabs and a large percentage of the private cars are in storage.

Many of the cheaper makes of United States cars have been represented in Stockholm for years. Sweden herself has only two makes, one of which is produced in very small quantities. The Scaniavabis is made in two models, selling at about \$2,500 and \$3,500. About 300 are made each year. Imports, however, are retarded by excessive taxation, 15 per cent of the value at the port of entry, the tax including the freight, which now is from \$500 to \$600 a car. A tire is taxed at the rate of about 35 cents for $2\frac{1}{2}$ lb. Accessories have several custom schedules.

Good roads lead 600 miles north from Stockholm, and satisfactory hotels are plentiful. The speed law is 25 m.p.h., and it costs about \$9 to register. This is a continuous registration, the registration being for the car and not for the owner as it is here.

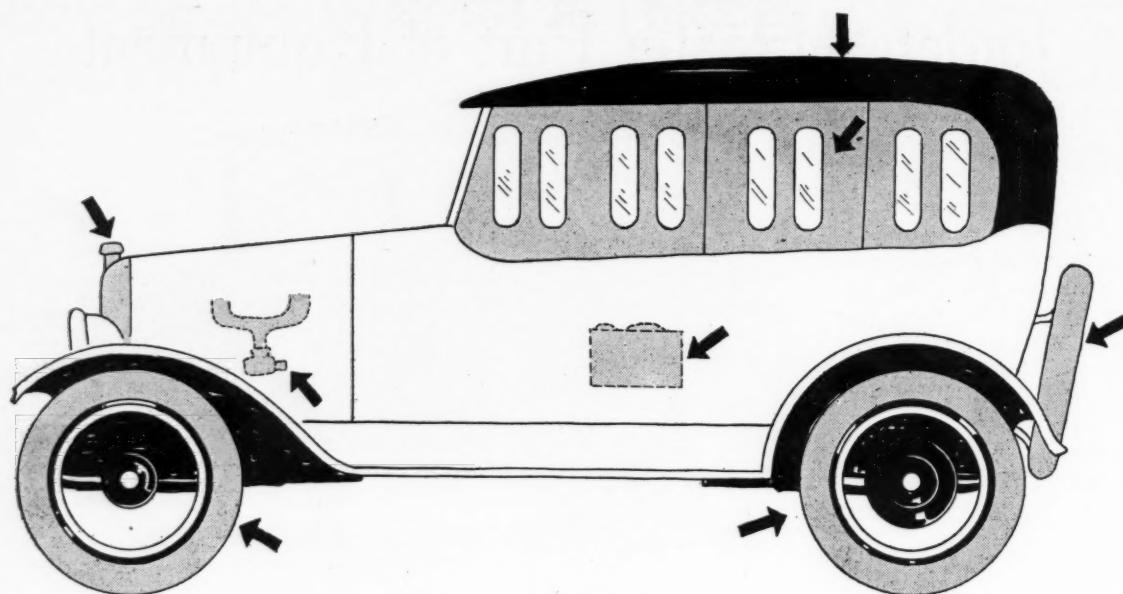


The Jordan coupe sells for \$2,300. It has an unusual amount of carrying space



The Jordan limousine has the long, low lines which characterize all bodies offered by this maker

"Winter Stuff"



I JUST talked with the circulation manager of MOTOR AGE. He drives his own car, and besides that he reads a dizzying number of letters every day from readers of MOTOR AGE who are kind enough to praise us or to condemn us. Yes, it is a kindness to be condemned, because it lets us know wherein we do not give the readers what they want. I asked him what he thought would most interest MOTOR AGE readers in matters of a mechanical nature. The query was hardly out of my mouth before he grumbled, "Winter stuff."

All right, it will be "winter stuff." When one stops to think that MOTOR AGE has published within the last 2 months a big number of stories touching upon every phase of the winter driving situation, the editorial department is naturally led to believe that the readers have had enough. But when the circulation manager himself, who reads every word in the paper, supposedly, blames poor starting to the coldness of the carburetor bowl instead of to the manifold we are inclined to believe that a review will find its place. Anyway every month brings in a big list of subscribers who have not read the other articles.

Why the Sketch Above

If the reader will study the above sketch he will find that the shaded portions of the car are the parts that should well be memorized as long as the winter months continue. Here they are: the storage battery, the radiator, the top, the side curtains, the carburetor, and the tires, both the ones in use and the spare. Remember them. **Battery, radiator, top, curtains, carburetor, tires.**

First of all comes the battery. Remember last week's editorial page? There

By Wallace B. Blood

was a list of resolutions for the motorist. He resolved to **watch that storage battery and fill it with water.** This applies to the car in storage as well as to the car which is driven. If you haven't got a hydrometer buy yourself one. They only cost \$1. Drop the hydrometer into solution from each of the battery cells every week. If the reading is not about 1275, get busy. Remember that the drain on the battery is twice as much and maybe more in the winter than it is in the summer.

For the man who puts his car in storage: Do not satisfy yourself with the mere act of going into the garage once a week, starting your motor and letting it run an hour or so with the hopes that it may be charged sufficiently. **The chances are that you will use enough current in starting the cold motor so that the hour's run will only compensate for that drain alone and will not give you a bit of new charge.** Here again is where you must use the hydrometer. If the battery is not up where it belongs run the motor some more. If the motor will not put the battery up take it out and have it charged or drive the car down to a charging station. Do not let the battery run down under any circumstances. It will freeze and buckle and generally go to pieces. Batteries are expensive.

Keep Water on Plates

Keep the electrolyte over the plates. This advice is carried in every car, electrical and battery instruction book published and still it goes disregarded. If you will look into the top of the battery you will have no trouble in seeing the plates and if you find there is no liquid over them pour in water until they are

covered $\frac{1}{4}$ in. or so. If they will not hold the liquid the jar is cracked. A new one must be put in by a battery expert. You cannot do it yourself. **Do not put anti-freezing solution into the battery.** It will not freeze if properly charged and it will be ruined with foreign solutions in it.

The radiator: How many of you readers are experimenting with every kind of alleged anti-freezing solution that some one calls your attention to? **Stop it.** There are a few things which will not do harm and there are a lot more that will. **Kerosene is not a good thing to use.** If you want to prove it to yourself cut a short length of garden hose. Procure corks to fit both ends and fill the interior with kerosene. Let this stand for two weeks, then pour the kerosene out, cut the hose and examine the interior. It will have the same effect on the radiator hose connections. Do the same thing with alcohol and glycerine.

Sodium Chloride Causes Rust

Try another experiment. Take an iron nail which has not been galvanized. Drop it into a solution of water and anti-freezing salt. You know lots of people are using sodium chloride as an anti-freeze. Leave it in there a week, take it out and let it dry by evaporation. The same kind of rust will grow in the water-jacket compartments of the cylinders.

Use alcohol or glycerine or a combination of the two. See page — of this issue.

The top and side curtains suffer all manner of unwarranted abuse in the winter, principally because when an owner drives a car into the garage his hands are cold. A man with cold hands is like a herd of cows at sundown. His and their one objective is home and warmth. When

(Concluded on page 51)

Electric Transmission Effect in Clutch

Hydraulic Action Permits Starting Without Jerk

THE same effect given by an electric transmission is derived from hydraulic action in the Radcliffe transmission. It is not designed to entirely eliminate a gearset but it is considered that the intermediate gear will be superfluous, although a low gear for emergency work is advisable. The transmission allows the car to be started from rest without jerk or danger of stalling the motor. Its flexibility is such that the car may be controlled almost entirely, accelerated, decelerated and stopped with it.

It takes the place of the ordinary clutch and is made up of either an aluminum or a pressed-steel casing provided with a large number of turbine blades. This is the driving member. The driven member has similar turbine construction. The whole assembly is filled with oil. One set of blades is located within the other set in the same plane. With the motor running slowly the driven member is held stationary, and the oil will circulate around the turbine blades with very little resistance. Speeding up the motor causes oil to be forced from the rotating part of the turbine into the stationary part. The oil enters with considerable pressure and the second turbine is caused to follow the rotation of the first. As the car gains speed the difference in rate of revolution of the two members gradually decreases until slip is eliminated.

It is the design of the turbine members that gives the flexibility. For instance, when the car climbs a hill, the slip increases in proportion to the amount of pull, thus allowing the engine to maintain its speed, giving the effect of gear changing.

In construction the impeller discharges

directly into the runner and the oil then passes back again into the impeller. There is a stuffing box at the center where the driven shaft comes out through the drive casing. This does not require an absolute seal, however, as the transmission is not completely filled with oil. A little air is left inside, and as soon as the motor starts to run, centrifugal force throws the oil outward. This brings the

air to the center, taking away the fluid.

The perfected device has been running in a stock six-cylinder Studebaker for over six months and no hill work has caused the oil to heat unduly, so it is claimed. Gasoline consumption compares favorably with the performance gained with the gear transmission. The device is now in the hands of the A. Elliott Raney Co., New York.

"Winter Stuff"

(Concluded from page 50)

the top is covered with snow or is wet and muddy, try warming your hands by beating the under side of the top. It is good exercise and makes the warm blood quicken. Besides that it removes water from the top which will freeze on it or rot and generally discolor it. When the weather is warm enough to melt, the top should be wiped dry to prevent hardening and rotting. When the weather is freezing, the top should be wiped dry to prevent formation of ice with its expansion and contraction, which tears the fine threads and weakens the top. **Always dry the top.** The same applies to the curtains, particularly in storing them. Do not put them away when they are wet or muddy. Clean them with soap and water. Clean the windows with a rather weak solution of vinegar.

The biggest thing to remember in the modern carburetor is that it has provisions for the delivery of a rich mixture without need of changing the settings of the adjustments. **Do not turn up the needle valve to start a cold motor.** The same effect will be gained by closing the butter-

fly valve. Here lies the trouble in a great number of cases. Where the butterfly valves are controlled by wires, there is always a possibility that they will get out of adjustment. **The valve must close tight.** If a little air is allowed to get through the effect is nearly all lost. The suction must draw raw gas directly from the needle with no air, if a quick start is desired.

Is there any part of a car which has received as much notoriety as the tire? A list of don'ts should give you enough hints so that you will realize the importance of caring for them:

Don't leave any cuts in them. Seal them up with compounds made for this purpose.

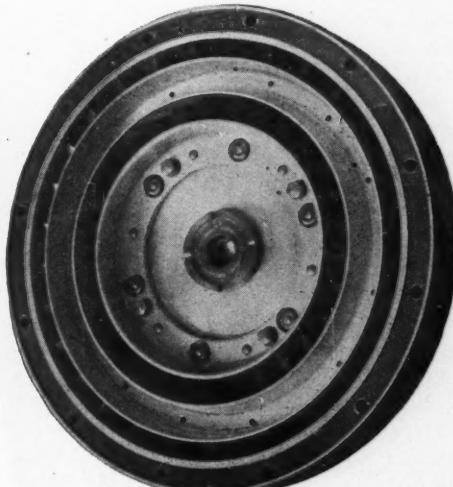
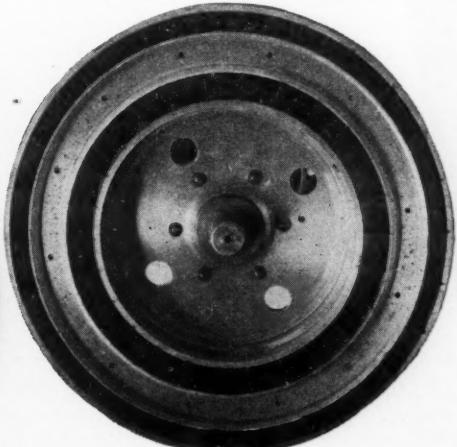
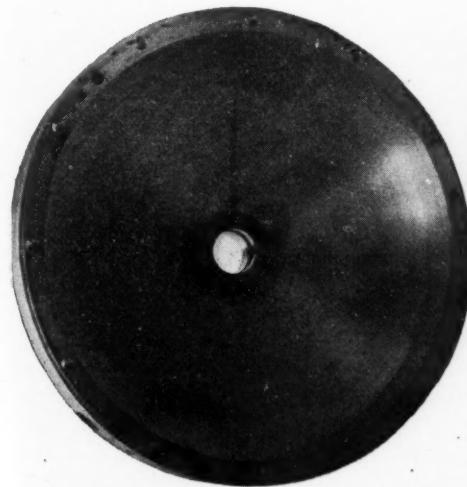
Don't drive them underinflated. They need the same pressure in winter as in summer.

Don't let the rims get rusty. Cover them with graphite or rim paint.

Don't drive in car tracks.

Don't drive in frozen ruts.

Don't leave the spare tire uncovered. Put a case over it.



The three members which make up the Radcliffe hydraulic transmission. Note the two rows of turbine blades

The Readers' Clearing House

**Harry Hartz, Claimant
of Title of Master
Junior Driver of
World, Rebuilds**

LOS ANGELES—Editor MOTOR AGE—If anyone had told me a year ago that at this time I would be riding in a reconstructed Ford racing creation that has cost me only \$375 and several weeks' labor, and is capable of a speed of 70 m.p.h., I would have told that person "it can't be done." However, that is just what I am doing at the present time—thanks to several kind friends and a railway freight train.

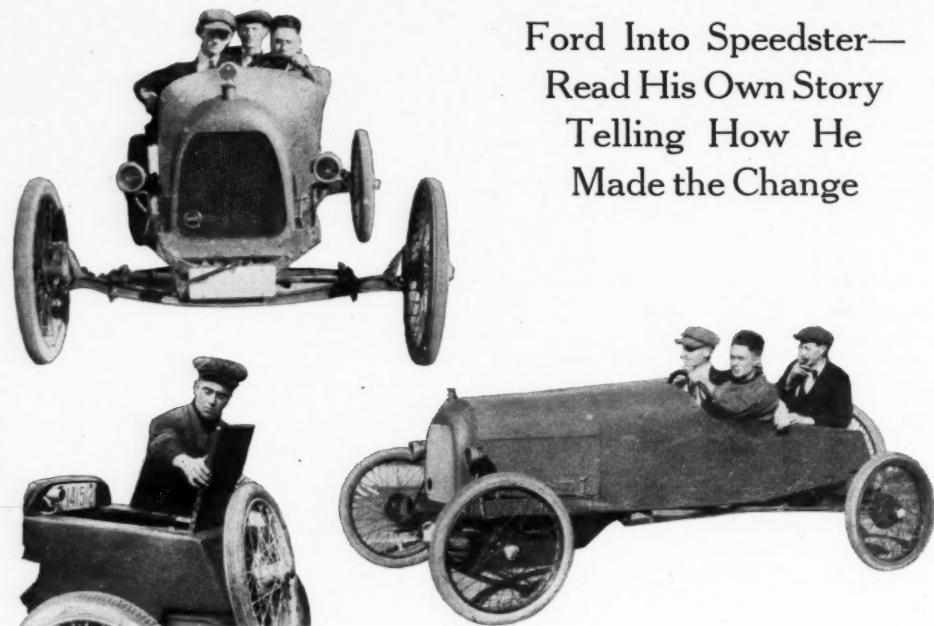
I purchased the chassis for the creation which I had planned many moons ago, after said chassis had been involved in an argument with a freight train in which the freight train came out victorious to the extent of nearly demolishing the Ford. Relatives of the deceased driver were lenient with me, selling me what remained for the small sum of \$100. When I took delivery on the chassis and told my friends of my intentions, I had their well wishes as well as a broom and a dust pan in which to collect the remains. The channel iron frame bore a close resemblance to a pretzel. The front axle, though in fairly good shape, gave testimony to having struck something. Two wheels were completely demolished, the differential housing and rear end were impossible, as were the steering-gear and, needless to say, the body, tanks and radiator.

Junk Parts Used

Therefore, when my construction work started, I had a badly-bent frame, two wooden wheels, a front axle several inches out of true, a torque-tube and driving shaft and a motor and gearset, the latter two parts being intact and in fine shape. With the above-enumerated parts, I started to build a speedster.

My plans called for a racing car from stem to stern and I started to prepare the motor according to specifications. Before I got any further than oil-grooving the bearings, balancing the pistons, enlarging the valves and portholes, my ideas changed and I decided to make a semi-speedster type car. Therefore, with the exception of adding a Miller carburetor and substituting a high-tension chain-driven Bosch magneto for the conventional Ford generator and coil-ignition system, the motor closely resembles the stock product.

The front axle was bent in a radius,



By Harry Hartz

starting at the arches which lowered the spring bolts $2\frac{1}{4}$ in. The frame was bent up $2\frac{1}{4}$ in. at a point starting about 2 ft. forward of the rear end. This operation lowered the entire car $2\frac{1}{4}$ in. The springs were then worked over, taking one leaf out of each, rear and front, and flattening whole springs 2 in., this entire operation lowering the entire car $4\frac{1}{4}$ in.

In the meantime, I had purchased a complete second-hand rear-end assembly, with the exception of torque-tube and driving-shaft, for \$15. The rear end purchased was immediately torn down and ball-bearing thrust-bearings were substituted for the bronze and steel thrust plates to take up the end strain on the ring gear and differential. This gave me a 100 per cent easier-running rear axle. Another innovation in the rear end was the substitution of $2\frac{5}{7}$ to 1 for the regulation 3.64 to 1 rear axle gears.

After I had overhauled and rebuilt the rear end, I next turned my attention to the chassis itself. I had the frame straightened and re-riveted and placed the springs and axles on same. The motor was then placed and a set of 28 by 3 Houk interchangeable cyclecar wheels which I had purchased some time before for my miniature racing car were placed on the axle shafts. The car was then set on the wheels and the steering gear was placed. This part of the car is strictly stock except that I substituted a flexible steering wheel for the regulation device. This wheel is made from a solid sheet of $\frac{1}{8}$ -in. spring steel with the spiders and rim cut from solid sheet. This provides a sturdy wheel

**Ford Into Speedster—
Read His Own Story
Telling How He
Made the Change**

which will spring and take away a great deal of the vibration.

While I had been working on other parts of the car, I placed an order for a flexible, Fiat-type radiator with a Los Angeles radiator manufacturer, which cost me \$40. This is one of the finest types made. I could have bought one at a lower price, but made up my mind that in this particular instance, I wanted the best. The radiator was placed on the chassis very soon after the steering-gear had been placed.

The gasoline tank was made and placed on the rear end of the frame, hanging back of the rear axle. This made the usually-unsightly Ford rear end look much better.

By the time I had hung this tank, I had made up my mind to make the car a three-passenger touring creation rather than the conventional two-passenger racing type. Therefore, I redesigned my body. Instead of a flaring tail which I had planned, narrowing in the rear, I left a swell just in back of the front seat, large enough that I could place a seat for one passenger in the rear. When not in use, the back of this seat slides up and folds over the hole, making the car appear to be only for two-passengers. I carry my extra wheel on the rear of the car on a specially-prepared wheel bracket.

The car when nearly finished was equipped with a foot accelerator and a Stewart vacuum-feed gasoline system. As my gasoline fuel tank hangs on the rear on a level with the rear axle, it was necessary that means be provided whereby the gasoline could be fed to the carburetor. The pump system offered so many

disadvantages that the Stewart system was selected. I also have the car equipped with two tiny presto lamps and a spotlight, the latter being run from the Ford generator. There is also a small windshield which can be removed in a very few moments for speed work.

I have told you just what has been done with this car in a mechanical way to make it a semi-speedster. Now I will tell you of its speed. The car has circled the Ascot speedway at Los Angeles in 1 minute flat. This means a speed of better than 70 m.p.h. on the straight stretches. I intend to rebuild the motor, reborning the cylinders, refitting the valves and placing ball-bearings wherever possible, and I believe with the experience in miniature car construction which I have had that I am safe in predicting that the car will average, on a straight road, 80 m.p.h. when completed. That it will do 70 now on the straight stretches is my firm conviction gained through my experience in judging speed, though I have no speedometer on the car at present. The car originally cost me \$100 and I believe that all the work that has been done, including parts, etc., could be duplicated for an additional \$275.

LARGER WHEELS ON SAXON FOUR Easier Riding and More Speed Would be Probable Result

Moorsfield, W. Va.—Editor MOTOR AGE—I would like to know if it would be practical to put a 30x3 wheel on a Saxon runabout?

2—What effect would it have on the power, and would it increase the speed? The reason for this is to get more clearance for rough roads and crossing streams.

3—Does MOTOR AGE know of a car by the name of Gadabout?—Reader.

1—Yes.

2—with the same gear ratio in the rear axle the motor would of course run slower to drive a car a given distance than it would with the smaller wheels. On good level roads, larger wheels would give you more speed and unless you have a great many hills and bad roads, the difference in power would not amount to much. The car would be noticeably easier riding.

3—Yes. Manufactured by The Heseltine Motor Corp., 2000 Broadway, New York.

FUNCTION OF THE SECOND POLE You Cannot Use Magneto Gears for Starting the Motor

Buckholts, Tex.—Editor MOTOR AGE—I have a Gray & Davis generator which has three poles. When I shorten the center pole to the outside pole on either side, it does not show a spark; but when I shorten the outside pole, it shows spark. What is the function of the center pole? I think it is a 1913 compound wound generator formerly used on a Paige car. How many amperes will it put out at full speed?

2—Kindly advise how to install a Gray & Davis starter on a 1913 Hupmobile 32. The starter was formerly used on a Ford. My idea is to remove the magneto, install the starter by using the gear off the magneto and driving by silent chain, setting the magneto on the platform in rear of the starter by coupling the starter shaft. What does MOTOR AGE think of this method?

3—Kindly publish a diagram showing the proper method of installing starter.—C. A. Lamkin.

1—The earlier Gray & Davis dynamos are compound wound. These have three terminals arranged as follows as viewed from the commutator end:

Left Hand	Center	Right Hand
Series	Negative	Positive

The left-hand terminals connect to the lamps, the center terminals direct to the battery through the ammeter, while the right-hand terminal connects to the regulator cut-out, thence to the lamps and battery. It is probable in your case that there is an open circuit within the dynamo, else the terminals would arc when the center and right-hand terminals are touched but would not arc when the center and left-hand terminals are touched. The arcing of the outside terminals would indicate that the shunt and series fields of the dynamo are intact, and that the dynamo is operating. We would advise that you see that all three wires connected to the center terminal on the inside are firmly connected. The wiring of this system is shown

in the 1913-1914 Gray & Davis instruction book. The output at 12 miles or more per hour with lamps off is 9 to 10 amp.

2—The gear designed for driving the magneto will not stand up for starter service, the strain being so much more severe. It would require a specially designed gear train to satisfactorily transmit the additional power. It may also be necessary, in this case, to increase the size of the bearings. This, together with the prohibitive cost of special design in order to use a starting unit designed for another car is sufficient to discourage its application.

3—We regret that the make of the starter was not named. Instructions for installing may be obtained through the starter manufacturers or their distributors, in which case it is necessary to state the type of unit for which installation instructions are needed, as specific directions differ widely. When writing give name plate readings for both generator and starter.

WIRE WHEELS STRONG AND LIGHT Cannot Even Approximate Speed From Proposed Alterations

Flint, Mich.—Editor MOTOR AGE—I wish to convert a Ford car into a racer, would it be advisable to use 32x3½ in. wire wheels, using oversize tires? Would this increase the speed?

2—Are wire wheels lighter and stronger than wooden wheels?

3—When using 2-to-1 gear ratio, and drilling the connecting rods, what would be the speed?

4—Does a cut-out hurt a machine in any way?

5—What is meant by piston displacement? How is it figured?—E. W. Fitch.

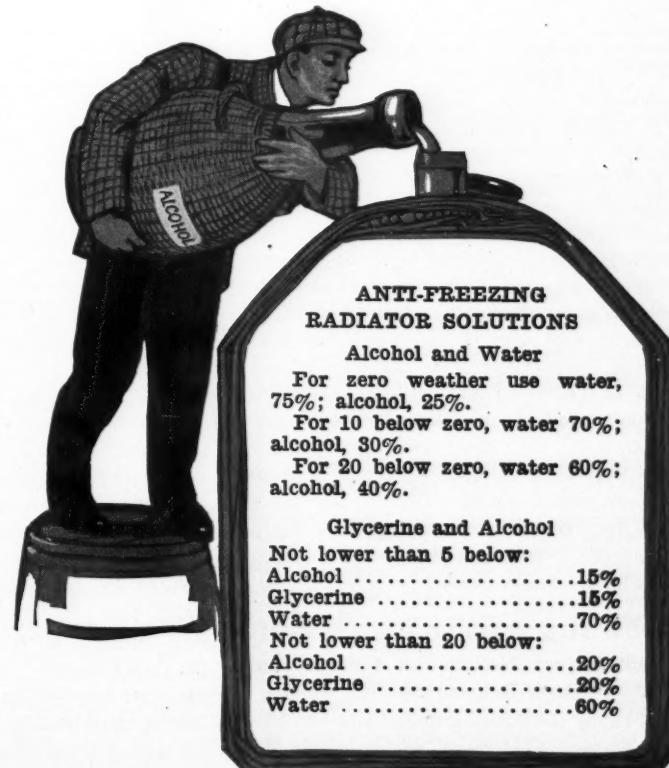
1—The wire wheel equipment of the size you mention should prove perfectly satisfactory. Oversize tires are not conducive to speed, however. The smaller the tire the less resistance and consequently the speed possibilities are greater. The factor of safety must be considered,

Communications Received and Inquiries Answered

Harry Hartz.....	Los Angeles, Cal.
Reader.....	Moorsfield, W. Va.
C. A. Lamkin.....	Buckholts, Texas
E. W. Fitch.....	Flint, Mich.
C. R. Holland.....	Victoria, Texas
A. S. Kreider.....	Lebanon, Pa.
Oscar Brown.....	St. Louis, Mo.
Lionel E. Gaunt.....	Cushing, Okla.
James Tephart.....	Greenville, Ohio
Irl K. Robinson.....	South Haven, Kan.
Lem Foster.....	Galesburg, Ill.
A. N. S.....	Marinette, Wis.
R. M. Haseltine.....	Sherwood, N. D.
C. E. K.....	Grand Junction, Colo.
R. M. Catu.....	Olympia, Wash.
J. R. Stead.....	Los Angeles, Cal.

No communication not signed by the inquirer's full name and address will be answered in this department.

Alcohol
and
Glycerine
Will Not
Harm
Rubber
Hose
or
Metal
Parts



however, but in this case is hardly an element inasmuch as 32-in. tires are amply big to take care of a Ford.

2—Yes.

3—A 2 to 1 ratio is too large for a Ford car equipped with 32-in. tires. A 2 $\frac{1}{4}$ to 1 ratio is low enough. There is no way of judging what the speed might be.

4—No.

5—The amount of space in the cylinder between the point where the top of the piston comes on the top of the stroke and the point where the top of the piston comes on the bottom of the stroke. It is figured by squaring the bore and multiplying by .7854 times the stroke times the number of cylinders.

MERCER WITH FIAT-TYPE FRONT Can Place Confidence in Speedometer if in Good Condition

Victoria, Tex.—Editor MOTOR AGE—I have a Mercer roadster 1914 model. Give some suggestions as to rebuilding the front end of same with a Fiat-type radiator and streamline hood instead of the present break with side lights. What would be the approximate cost?

2—Although the car has only been driven

up on a hill on high the same as a six, eight or twelve-cylinder?

2—State what the car is geared at.

3—Give the size of the cylinders.

4—What is the piston displacement in inches?

5—How many miles can I get out of a gallon of gasoline?—Oscar Brown.

1—We cannot claim that it is possible that the four-cylinder 16-valve Stutz motor will slow down in high speed going up a hill, the same as can be done with the multiple-cylinder motor. However, it is unnecessary to attain great speed on the approach of a hill in order to negotiate the same. You no doubt appreciate that the multiple-cylinder afford more impulses in the motor, which makes it possible to decrease the speed or increase it as may be desired by the driver in negotiating steep hills.

2—The Stutz Bearcat model in which the 16-valve four-cylinder motor is installed will be geared 3 $\frac{1}{2}$ to 1, or 49-14.

3—This motor has a bore of 4 $\frac{3}{8}$ inches and a 6-inch stroke.

4—360.78.

5—As to the miles per gallon would say no official tests have been made, but in the

better off than you are now. Let a good mechanic examine your car and tell you what is wrong with it.

MAY NOT INCREASE SPEED OF CAR

There is a Limit to Higher Gearing and Bigger Wheels

Greenville, O.—Editor MOTOR AGE—I am building a racing car and want to know which will be the better and give the best results to use, the present 3 $\frac{1}{2}$ to 1 gear ratio and change the wheels to 34x4 or change the ratio to 2 $\frac{1}{2}$ to 1 and get demountable wire wheels and use 31x4 tires?

2—How much difference will there be in the speed of the car with these changes? The present equipment is 3 $\frac{1}{2}$ to 1 with 30x3 $\frac{1}{2}$ tires.

3—What I want to know without any more correspondence is, will the car be safe with 34x4 or 35x4 wood wheels with good cord tires? This car will line up 75 m.p.h. with 32x3 $\frac{1}{2}$ tires.

4—I have the cylinder head combustion chamber, filled in with the gas welding system which will increase the compression and is going to increase the lift and the character of the valves. I think this car should do 90 m.p.h. with these changes.—James Tephart.

1-2-3—You tell us about the gear ratio and tire sizes, but unfortunately omit the very necessary information as to what kind of a motor you have, bore and stroke,

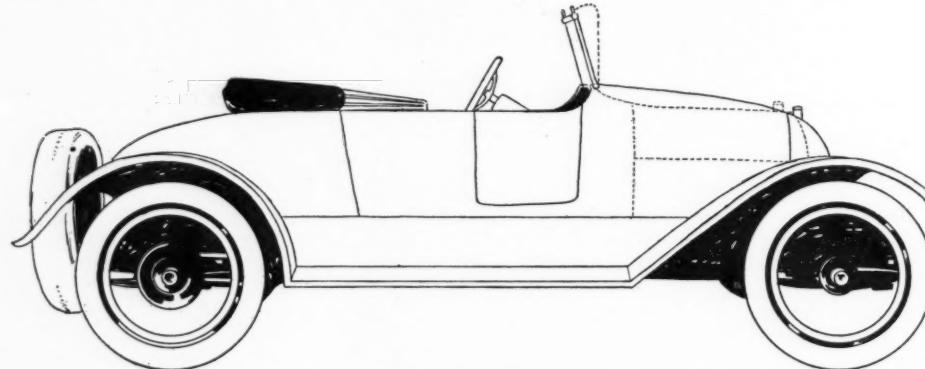


Fig. 3—Proposed alterations of Mercer embodying Fiat-type radiator. The new hood not only would follow the radiator lines but also would balance well with the rear deck

10,000 mi. it is now only able to attain a speed of 60 m.p.h. What would MOTOR AGE suggest to gain more speed?

3—Is it right to place confidence in the exact registration of the Jones speedometer with which the car is equipped?

4—In damp climates, is it impracticable to use wire wheels on a car?—C. R. Holland.

A drawing is published in Fig. 3, which will give you some idea of the appearance of the car with a Fiat-type of radiator, and a streamline body. It is an impossibility to give an accurate figure on the cost of such alterations. It depends entirely on who does it and how it is done.

2—A complete overhauling and adjustment of parts. There is no reason why this car needs to be altered to get more speed.

3—Yes, if it is not worn out or damaged.

4—No. We have never heard the statement made that it is and surely see no reason why it should be.

ABOUT THE SIXTEEN-VALVE STUTZ Cannot Expect Four to Act Same as Multiple-Impulse Motor

St. Louis, Mo.—Editor MOTOR AGE—Will the new Stutz four-cylinder 16-valve engine slow down on high going up a hill and then pick

first experimental motor 16 $\frac{3}{8}$ miles were secured on one gallon of gasoline. However, the company does not wish to guarantee this mileage inasmuch as no official tests have been made.

His Car Lacks Power

Cushing, Okla.—Editor MOTOR AGE—I have 1916 Apperson Six which has been run between 6000 and 7000 mi. At first this car made 60 m.p.h. without the least vibration, but now will hardly make 40. It seems as though something holds the car back. I have tried a carbon remover, but it has not done much good. When the car gets to 30 m.p.h. the cylinders begin to miss. What is the trouble?—Lionel E. Gaunt.

With all due regard to your interest in the matter, Mr. Gaunt, stop and consider the question you are presenting to us. What if you went to a watchmaker and said, "I bought this watch a year ago and it ran fine until a month ago, when it started losing time. What is the matter?" Do you think that watchmaker could tell you offhand what the trouble was without a thorough examination of the instrument? The lack of power in your car may be due to any one of a long list of troubles and if we were to enumerate all of these troubles you would be no

etc. It will be safe to use 34 by 4 or 35 by 4 wood wheels.

4—Do not think that the speed of a car can be increased everlasting by stepping up the gears and using larger wheels. It is very possible that higher gearing and larger wheels would reduce your speed rather than increase it. It depends entirely on what weight the motor has to carry in proportion to its power.

OILING METHOD IN FORD RACERS Regular Splash System in Conjunction With Hand Pump

LeBanon, Pa.—Editor MOTOR AGE—What method of oiling was used in the most successful of the Ford racers?

2—Did any of them change the steering mechanism in any way, except lowering the steering wheel?

3—Would MOTOR AGE advise the removal of the flywheel magneto in order to reduce the weight of the flywheel?

4—Did any of the fast cars use the regular Ford carburetors?—A. S. Kreider.

1—The regular Ford splash system in conjunction with a hand pump operated by the mechanic which fed oil directly into the crankcase.

2—No.

3—In some of the fast cars the magnets

were removed; in others they were not. Make all other alterations first and then try this. You can readily determine by this method whether the lighter flywheel increases the car speed.

4—No.

REASON FOR SMALL FRONT TIRES Power Applied to Rear Wheels Makes Greater Strain There

Galesburg, Ill.—Editor MOTOR AGE—Which is the more practical—demountable rims or demountable wheels?

2—Why is the Ford equipped with a smaller tire in front? Would they have the same amount of power, be as easily controlled and give the same mileage per gallon if 3½-in. tires were used?

3—Does MOTOR AGE advise oversize tires?—Lem Foster.

1—It seems to be a matter of varying opinion. Demountable wheels are generally quicker to handle than demountable rims although more cumbersome to carry as extras.

2—Because there is less strain on the front tires than on the rear. It must be remembered that the rear tires take the drive from the motor. The larger tires

are difficult. Of course, we are assuming that the platinum points are set properly with a clearance of .025 in. If the above is the case a new transformer would not remedy a weak magneto.

WANTS TO MAKE BUICK SPEEDY Sketch Given of Model 21 Stripped Down as a Racer

Marinette, Wis.—Editor MOTOR AGE—Give the bore and stroke of the Buick Models 17 and 21.

2—Could a Model 17 be used in a Model 21 frame without too much trouble? If so, kindly give a diagram showing the changes to be made and also showing how to tilt the steering wheel.

3—Give a sketch of the Model 21 touring as a speedster with the gasoline and oil tank in the rear.—A. N. S.

1—The size is 4½ by 4½ in each instance.

2—Not having drawing showing the dimensions available we cannot give you the plans you ask for. The steering wheel may be tilted by merely dropping it down to the desired height and setting the gears to take care of the new location.

3—The sketch you ask for is shown in Fig. 4.

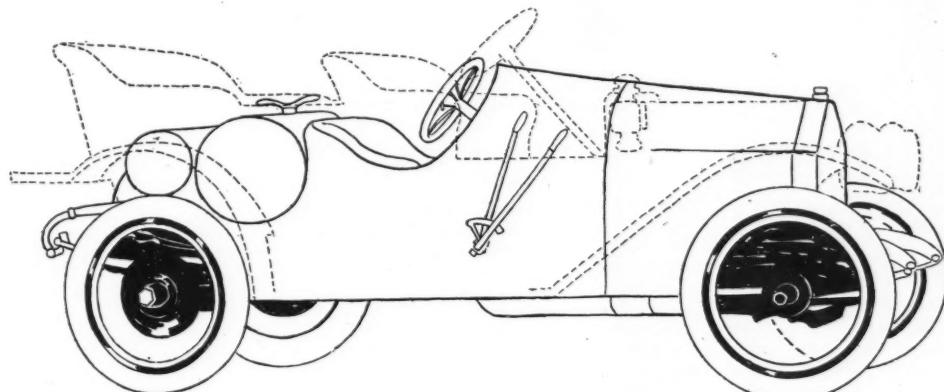


Fig. 4—A model 21 Buick can be rebuilt to appear as shown in this sketch. This follows the reader's idea of a gasoline and oil tank in the rear

are more economical as far as mileage is concerned than the smaller ones. Although there is slightly more road resistance it is not enough to appreciable reduce the gasoline mileage.

3—Yes.

NO START WITH BATTERY SWITCH A and Circuit-Breaker Wires Probably Connected Wrong Way

Grand Junction, Colo.—Editor MOTOR AGE—I have a Buick Model 29 touring car equipped with a Splitdorf transformer and Slitdorf magneto, which I am unable to start with the switch on the battery side. I can crank it with the switch on the magneto side, but as the weather gets colder, it makes starting harder. This is what has been done to find the trouble: I have put in four new dry cells testing 30 amperes, bought a new tubular Splitdorf transformer and had it wired up by an expert, using new wires, which proved to be no better than original transformer. However, by changing the wires on the contact posts of the magneto, we found it would run on the battery side and not on the magneto side. There is plenty of platinum on the breaker points in the breaker box, adjusted according to a Splitdorf gauge. The magneto is a Model T. B.—C. E. K.

Based upon the information you give us we would assume that the battery current went through the magneto where the A wire and the circuit-breaker wires on the magneto were connected the wrong way. This would have a tendency to make start-

ing difficult. Of course, we are assuming that the platinum points are set properly with a clearance of .025 in. If the above is the case a new transformer would not remedy a weak magneto.

2—I am going to put one K-P ring on each piston of my 1913 twin Harley-Davidson motorcycle. Would it be best to put these in the upper middle or lower ring groove?—Irl K. Robinson.

1—A 1911 Ford might well be compared with an 80-year-old man. The wear and tear of a long existence slows them down. Your information is indeed meager. So much so that we can give you no clue to the trouble unless it is that the motor overheats.

2—The ring should be put in the upper groove so that the compression will be held as near the top of the piston as possible.

No Power in Old Car

Olympia, Wash.—Editor MOTOR AGE—I have a Studebaker 30, 1912 model. Why is it that this car has no power when it comes to pulling?

The valves have been ground and are in good shape. There are three new rings in each cylinder; there is no compression leak that I can find; the carburetor is in good shape, and it runs fine when not pulling.—R. M. Cata.

There are so many reasons why this car may not pull that we would have to enumerate practically all mechanical troubles

Tire Size and Car Performance

Sherwood, N. D.—Editor MOTOR AGE—My car has a 31x4 tire. Now, if I put on a larger wheel and use a 33x4 tire what effect will that have on the efficiency of the motor? The gear is 4½ to 1. I contend that the larger tire will diminish the power of the motor, that is, the car will not climb a hill as well, will not pull through mud or sand as well, and will not pick up in speed near as quick, but will probably attain a higher rate of speed after getting started. Am I right or wrong?—R. M. Haseltine.

You are right, although the difference in tire size will not make a surprising difference in car performance.

Direction of Racers

Kirkwood, Mo.—Editor MOTOR AGE—Tell me if there is any scientific reason for running races around to the left, or is it a custom?—Robert Craig, Jr.

There is no scientific reason for the direction of running races. It is time-worn custom which has always been a part of horse racing, and the custom has been followed on motor car speedways.

Old Ford Will Not Pull

South Haven, Kan.—Editor MOTOR AGE—What is the matter with a 1911 Ford touring car? The carburetor is in good shape, and the car runs like a house afire, then again it will not pull one's hat off. The car was recently overhauled from stem to stern; new valves and push rods installed, also one new ring in each piston. This made no difference

found in a motor car. It may be that the car is just naturally worn out.

Explosive Pressure is Heat

Las Vegas, N. M.—Editor MOTOR AGE—The Buick company claims that its valve-in-the-head motor is superior to other types on account of the fact that there is less area to be water-jacketed, therefore less loss of heat, and that heat is what actuates the piston. Is it true that heat moves the piston, or is it the explosive action of the rapidly burning gas?

2—Has the valve-in-the-head motor any advantage over the T and L-head motors?

3—Is the Buick D-4-35 as successful a car as the 1916 six-cylinder?—Clyde D. Williams.

1—Explosive pressure is caused by heat.

2—Yes, slightly more efficient.

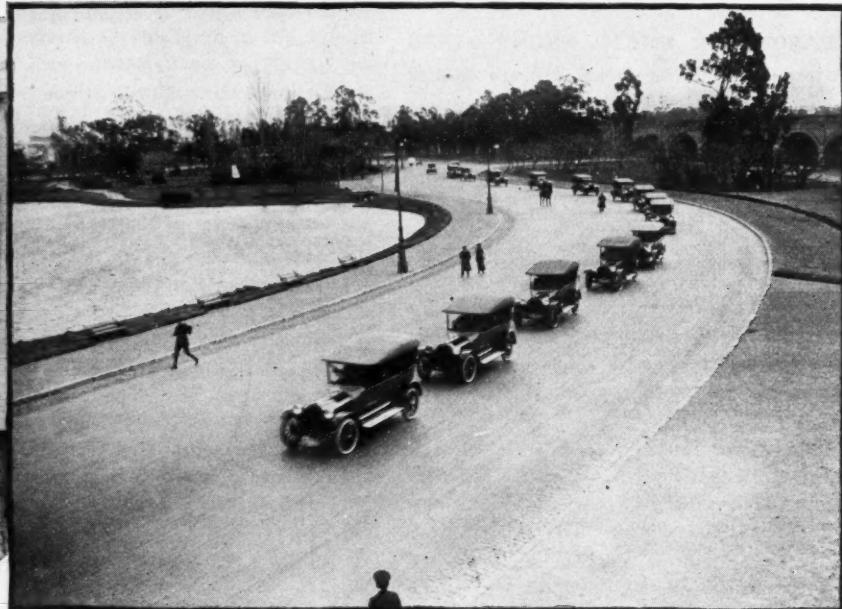
3—Cannot say.

Gummy Radiator Compound

Los Angeles, Cal.—Editor MOTOR AGE—The honeycomb radiator in my Lozier car sprung a leak some time ago. A garageman put in a radiator compound and it stopped the circulation. A can of lye and muriatic acid have failed to remove it. Does MOTOR AGE know of anything else I can use? The pump works so fast that it pumps it nearly all out through the overflow.—J. R. Stead.

Without knowing the nature of the radiator compound we cannot give you a specific that will remove the clog. You should be very careful of radiator compounds. Solder is the real remedy.

From the Four Winds



SCENES FROM THE SOUTHLAND OF THE AMERICAS—The illustrations show two typical Buenos Aires scenes in Argentina. A parade of Studebaker cars is at the moment of these photographs filling the streets. One street is a drive in the Palermo park, a show point in Buenos Aires. The drive is as wide as that in any United States park. The other street is the Avenida de Mayo, one of the big avenues of the city, corresponding to Pennsylvania avenue, Washington, D. C. At one end is the capitol and at the other are the offices of the president and his ministers. A convention of Studebaker dealers was held here this fall. The Studebaker branch is on the avenue fronting the park.

MONTANA Show Date Set—Montana's state motor show is to be held Feb. 26-March 3. All the state distributors have agreed to take space, and the exhibition will be held in the city market building at Great Falls.

Iowa Limits 1917 Plates—Iowa will not issue new number plates for 1917 when cars have been registered before. Each owner will receive a card with certificate that he has paid the fee. All new cars, of course, will receive number plates. The first new car registered for 1917 is to receive No. 198,052.

New Road Act in Effect—The Egan Good Roads Act, recently approved by the voters of New Jersey, went into effect Jan. 1, and as a consequence all state moneys derived from motor car licenses, fees and penalties are withheld from distribution among the counties of the state. In view of the apparent inadequacy of the act the new legislature is expected to take immediate steps to alter its provisions, with the probability that it will be abandoned and a new plan taken up.

Wisconsin Buys Cars for Officials—Fifteen of the eighteen cities of the first, second and third classes in Wisconsin now provide city officials with motor cars for official business, according to the state municipal reference library of the University of Wisconsin. This means that all but three towns in the state having 10,000 population or more, own one or more cars, or pay the cost of upkeep on others. Statistics were compiled for Wisconsin municipalities to show how far a city should go in supplying officials with cars and how the service should be supplied. The tendency in Wisconsin seems to be to purchase and maintain machines and to grant additions to salaries for upkeep of cars owned by officials and used part-time for official

business. The reference library is drafting a model ordinance for the creation and maintenance of municipal garages, cost records, etc.

U. S. Sells Cars to Java—Java imported 759 motor cars during the first 6 months of 1916, and of these 668 were from the United States. Italy sent 53, and Holland 32.

Road School Announced—The sixth annual road school for all road builders in Wisconsin will be held at Madison during the week of Jan. 29. Last year the enrollment was more than 700. At these meetings all recent developments in road and bridge construction, maintenance and administration are discussed by experts, and an exposition of tools, machinery and materials is made.

Will Not Halt Road Work—The muddle caused by the apparent inadequacy of the Egan Good Roads Act will not halt work on the principal highways in New Jersey, as the counties are prepared to take up the work at their own expense. The paving of the last stretch of highway between Philadelphia and Atlantic City will go forward without further delay as soon as the weather permits.

To Mark Alton Way Division—The Springfield, Peoria and Chicago division of the Alton Way has been organized. Each town represented will see that all poles on the route in its vicinity are painted with the official symbol, a 6-in. band of black, flanked above and below with 6-inch bands of white. The route between Peoria and La Salle follows the old stage line; north of La Salle the route follows the old Starved Rock trail. The Alton Way is known as the oldest marked trail in the state and was the first to use the system of painting the poles along the

highways. The route, now extending from Chicago to St. Louis, is regarded as the most picturesque in the state and follows the Illinois river.

All Louisville, Ky., Space Sold—For the first time in the history of the Louisville Automobile Dealers' Association all show space has been disposed of more than 6 weeks before the show is to be held. The organization now is trying to make arrangements to accommodate those who were late in placing applications for space.

Good Roads Gain in California—The recent vote on a \$15,000,000 bond issue for roads in California shows that no county voted against the issue, though there were 137,107 negatives to the 542,239 affirmatives. When a \$18,000,000 issue was proposed in 1910, 93,297 voted for it, and 80,509 against it. Fourteen counties opposed the 1910 issue.

Denver Club Has 500 New Members—The Denver Motor Club closed its year with 1,300 members. A campaign will be followed to bring the membership up to 2,000 during the new year. Nearly 500 new members were obtained last year, and the officers feel that the increasing benefits, combined with the large number of cars in this territory, ought to insure a much larger increase this year.

Dangers of Canadian Ownership—It is considered dangerous to own a car in Canada since the Court of Appeal at Toronto ruled that the owner is responsible for every violation of law unless the car has been stolen and the thief is not in the employ of the owner. The case in question was for damages caused by the foreman of a garage at which the car was left for repairs. The car was used for a family ride downtown, and an accident occurred. Decision first was that

the car was stolen and the owner was not liable, but later the theft theory was changed to that of civil trespass, and the owner was made liable for the foreman's conduct.

Why Buy a Car?—That there may be more than one reason for buying a motor car might be judged from the explanations given by the in-coming and the out-going sheriffs of a Montana county. Each bought a Cadillac. The out-going one said he wanted to enjoy himself for a few months. The other said he wanted help in his work.

New Directors for Lincoln Highway—Sidney D. Waldon, Detroit, and James A. Allison, Indianapolis, have been chosen members of the directorate of the Lincoln Highway Association. Mr. Waldon is a consulting engineer and has driven across country several times, being thoroughly familiar with types of road needed. Mr. Allison has been active in the affairs of the association since its inception.

Bad Roads Affect Market Produce—Texas commission merchants sometimes reject market produce that has been damaged solely by transportation over poor roads, it is said. Some of the farmers in a poor road district fit special springs on their vehicles, but this reduces capacity and incurs an expense which would go far toward paying taxes needed for good roads.

Number of Exhibits Limited—Because of the great demand for space at the Columbus, Ohio, show, it has been found necessary to limit the number of models to be displayed by the different agencies to three cars. More dealers will show this year than ever before, and despite the fact that the individual exhibitions will be limited, there will be a shortage of space.

Cars Increase in Southwest—Texas gained 61,632 registrations in 8 months during the latter part of 1916. Most of this gain was in the rural districts. Altogether Texas had 191,375 registered up to Dec. 1, the latest date at which figures are available. Among others of the Southwestern states, Oklahoma had 50,849; Arkansas, 15,423; Louisiana, 16,887, and New Mexico, 8,228.

Second Speed Down Mountains—The usual thing to do when driving down a mountain side is to hold the car with motor and brake, but when R. P. McCurdy of Pittsburgh went down Cove mountain with the temperature at 6 degrees and a heavy snow on the ground he used second speed to pull his car down. A spare gallon of oil froze solid on the trip, which was between Pittsburgh and Philadelphia.

To Improve Dangerous Crossings—The wooden bridges upon which motor traffic between Philadelphia and Atlantic City crosses railroad tracks at Atco, Ancora and Elm, N. J., are to be made safer. The county authorities and the railroad company will act together in widening the bridges, strengthening them and improving the approaches. These bridges are all on the famous White Horse pike.

Wandering Garage for Derelict Cars—Alfred Gill, once a Los Angeles bank clerk, and later a highway wanderer for his health, roams the vicinity of Los Angeles with a garage mounted on his Chevrolet. A small truck on the chassis carries tires, oil, tools and a small line of accessories. He is a familiar sight to tourists, and the upkeep on his garage is so low he is recovering his health with little actual cost to himself.

Twenty Millions for Roads—The government of the Province of Quebec will have \$20,000,000 for good roads this year. A bill to amend the Good Roads Act, and containing this provision, was passed recently. In 1912 the government borrowed \$10,000,000 for roads. Last year it borrowed \$5,000,000 more. Under the new law municipalities pay half the cost of provincial roads within their

boundaries. For municipal roads the government may pay a subsidy of not more than \$400 in any one year. Provincial roads are those built under the act of 1912 and the King Edward highway.

Ferry Gives Short Cut—Ferry service across the Colorado river, between Arizona and Nevada, has been installed near Searchlight, Nev. The new boat is 42 ft. long and 16 ft. wide, and has a capacity of three machines. Excellent landings are available on both banks of the river, and the roads to and from the landings are in good condition. The boat is gasoline-driven and has no cable. The

journey from Kingman to Searchlight can now be made in about 4 hr., and to Las Vegas in about 7 hr. The new service affords a short cut for tourists between northern Arizona and Nevada.

Club Issues 1917 Plates—Since the Chattanooga Automobile Club received permission to distribute new 1917 number plates, the secretary has issued more than 1,200, which represents a collection of about \$7,000.

To Show at Fair Only—Springfield, Ill., dealers will show only at the state fair this season. The proposition of holding a motor show at the state arsenal was discussed, but most of the dealers thought the show at the fair enough.

Any Claim for Damages?—The Trojan horse had nothing on a St. Louis mule. A woman in St. Louis was driving a motor car recently and hit a mule. Her shoulder was dislocated in the collision, but it is said not even the mule's disposition was dislocated.

Atlanta Show Date Set—The Atlanta, Ga., show will be held Feb. 24-March 4 at the auditorium. Sign posts at each exhibit will have roofs similar to those of the Japanese houses and will be decorated with Japanese characters. Red and white colors will be used.

He Did This on a Bet—C. H. Davis is not from Missouri, but when someone made a wager with him, or he made a wager with somebody else, that he could drive a Woods-Premier through the downtown streets of Denver with one arm as easily as anything, he proceeded to show he could. Charles F. Roehrig, secretary of the Denver Motor Club, did the tying of one arm. An official watcher was appointed. The showing lasted 6 hr. and was without accident.

County Court Re-Registration—Tennessee car owners need not pay a \$1 re-registration fee with the county court clerk since the Chattanooga Automobile Club carried a test case to court and obtained the ruling that the Secretary of State could issue new numbers but re-registration of same with the county court was unnecessary. Owners objected to paying for the registration of a number with the county court clerk as it duplicated the record kept by the Secretary of State.

Moth Balls Help Gasoline—Whether 'tis nobler to put the expensive gasoline in moth balls for safe storage or to put moth balls in the expensive gasoline for more mileage is no longer as much of a question since various Kansas chemists have undertaken the investigation of preparations claimed to decrease fuel cost. One chemist figures that 6 cents' worth of moth balls gives \$2.60 worth of naphthalene, which is used in preparations for motor car tanks to give more mileage.

Jersey Governor Plans State Road Tax—Governor-elect Walter E. Edge of New Jersey who takes his seat this month, is planning an easy and practical way to raise funds for permanent road improvement. The new governor wants to impose a state road tax of 10 cents on each \$1,000 valuation for 5 years, which would bring into the state a total of \$15,000,000 for good roads. It is expected that this or a similar plan will result in making Jersey roads the finest in the country.

Who Gets the Freak Numbers?—Fred Kuser, special agent of the New Jersey Motor Vehicle department in New York, gets Nos. 1, 2 and 3 of that state. Governor Martin G. Brumbaugh gets No. 1 in Pennsylvania; the state highway commissioner, Frank B. Black, No. 2; and the chief engineer of the highway department, William D. Uhler, No. 3. In Delaware first come was first served, and the holders of the first three digits in 1916 have them for another year, but Charles G. Guyer got the 13 and 23. Maryland gives these numbers to heavy motor trucks.

Coming Motor Events

RACES —1917—

May 19—Metropolitan Trophy, New York speedway.

†May 30—Indianapolis speedway.

June 9—Chicago speedway.

June 23—Cincinnati speedway.

†July 4—Omaha speedway.

†July 14—Des Moines speedway.

†July 28—Tacoma speedway.

August 4—Kansas City speedway.

†September 3—Cincinnati speedway.

†September 15—Providence speedway.

†September 29—New York speedway.

October 6—Kansas City speedway.

October 13—Chicago speedway.

October 27—New York speedway.

†A. A. A. championship events for 1917.

MEETINGS

January 9-11—Midwinter meeting, Society of Automobile Engineers.

SHOWS

January 5-11—Milwaukee, Wis., show.

January 6-13—New York show.

January 12-20—Philadelphia show.

January 14-16—Manchester, N. H., show.

January 20-27—Detroit show.

January 20-27—Montreal, Can., show.

January 22-27—Oklahoma City show.

January 22-27—Rochester, N. Y., show.

January 23-27—Allentown, Pa., show.

January 23-27—Baltimore show.

January 25-27—Asheville, N. C., show.

January 27-February 3—Chicago show.

January 27-February 3—Columbus, Ohio, show.

January 27-February 5—York, Pa., show.

January 28-February 3—Wilmington, Del., show.

January 29-February 3—Buffalo show.

February 3-10—Minneapolis show.

February 5-10—Bangor, Me., show.

February 10-17—San Francisco show.

February 12-17—Hartford, Conn., show.

February 12-17—Kansas City show.

February 13-17—Louisville, Ky., show.

February 13-16—Grand Forks, N. D., show.

February 13-17—Sioux City, Ia., show.

February 14-17—Peoria, Ill., show.

February 19—Pittsfield, Mass., show.

February 19-24—Bridgeport, Conn., show.

February 19-24—Des Moines, Ia., show.

February 19-24—Duluth, Minn., show.

February 19-24—Grand Rapids, Mich., show.

February 19-24—St. Louis Show.

February 19-24—Syracuse show.

February 24-March 4—Atlanta, Ga., show.

February 26-March 3—Omaha, Neb., show.

February 26-March 3—Great Falls, Mont., show.

February 26-March 3—Utica, N. Y., show.

March 1-3—Urbana, Mich., show.

March 3-10—Boston show.

March 3-10—Washington, D. C., show.

March 6-10—Fort Dodge, Ia., show.

March 14-17—Davenport, Ia., show.

March 14-17—Mason City, Ia., show.

March 18-23—Cedar Rapids, Ia., show.

April 4-7—Stockton, Cal., show.



Among the Makers and Dealers



GENERAL Rubber Co. Enlarges—The General Tire & Rubber Co., Akron, Ohio, will enlarge its factory by a \$50,000 addition.

Barber Is Peerless Retail Manager—J. W. Barber, who has been with the Peerless Motor Car Co. for the last 8 years, has been appointed manager of retail sales for Cleveland.

U. S. Truck Co. of Michigan Formed—The company formed by George Benham to handle the United States Truck of Covington, Ky., has been organized under the name of the United States Truck Co. of Michigan.

Universal Co. Affairs Closing—Affairs of the defunct Universal Mfg. Co., Racine, Wis., maker of steering gears and accessories, which failed Dec. 19, 1914, are now being closed, and creditors will net 6.1 per cent on claims which amount to \$85,973.

Walker Mfg. Co. Plant Is Completed—The Walker Mfg. Co., Racine, Wis., maker of jacks, hoists and other garage and motoring specialties, moved into its new factory on Jan. 2. In the new shop the company will have more than three times the floor space of the old factory.

Fisher Body Sales Increase—The sales of the Fisher Body Corp. for November amounted to \$1,650,000, an increase of \$180,000 over October and \$400,000 higher than any previous month in the fiscal year. Total sales for the last 9 months are 65.56 per cent higher than for the same period in the previous year.

Plymouth Construction Progresses—The first two units of the four-unit plant being erected by the Plymouth Motor Castings Co., Plymouth, Mich., will be completed shortly. Each is 50 by 100 ft. Two other units, each 50 by 208 ft., will be erected soon. The company plans to provide homes for its workmen, and will build the first twenty houses soon.

Holland to Myers Machine Co.—Harris F. Holland, Indianapolis, has been appointed sales manager of the motor truck division of the Myers Machine Co., Sheboygan, Wis., to succeed L. P. Helm, who resigned. The Myers company absorbed the Wisconsin Motor Truck Co., Baraboo, Wis., purchasing the interests of Mr. Helm, who joined the Myers company as manager of the truck department.

Special for Oklahoma Dealers—About 150 dealers will come to the Chicago show on a special train from Oklahoma City. En route they will stop at St. Louis, where they will be entertained by the Business Men's League and local dealers' and accessory associations. The excursion will be under the auspices of the Oklahoma Stockman-Farmer, which will give a breakfast for the Oklahoma dealers at one of the Chicago hotels during show week.

1917 Tractor Contracts Placed—The La-Crosse Tractor Co., formed by consolidation of the Happy Farmer Tractor Co., Minneapolis, and the Sta-Rite Engine Co., LaCrosse, Wis., has signed contracts to deliver 2,750 tractors during 1917 to jobbers. The company's immediate capacity is 2,500 tractors per annum, and it either will provide additional production facilities at once or make contracts with other shops for surplus output. In addition to the 2,750 machines already contracted for, the company has nearly 100 orders for export shipment, and a miscellaneous lot of orders in the United States. The jobbers' orders cover only the minimum requirements for the new year, so that the first year's production is estimated at more



NEW GIANT A FIT NAME—Herein is presented the New Giant, a tire 42 by 14 designed by Firestone Tire & Rubber Co. for trucks of 6- and 8-ton capacity. The experiments for this tire have covered a period of 3 years. It is claimed that this is the largest single tread solid tire ever made. The size, both as to height and width, can be judged from the method of its display.

than 3,000 tractors. The machine will be trade-marked the Happy Farmer and is a general utility tractor.

Hoelze Is Promoted—E. C. Hoelze, who has been the assistant to the general manager, has been elected assistant treasurer of the Parker Rust-Proof Co. of America.

Banker for Jones Directorate—O. L. Lennen, a banker at Ness City, Kan., has been elected to the directorate of the Jones Motor Car Co., Wichita, Kan.

Motor Plants May Merge—The Economy Motor Car Co., Tiffin, Ohio, and the Bellefontaine Automobile Co., Bellefontaine, Ohio, plant to merge and locate their combined factory in Bellefontaine.

M. & S. Corp. Expands—The M. & S. Corp., Detroit, has installed its new plant for the manufacture of differentials, and will increase its equipment by Feb. 1 to give a capacity of 400 differentials a day.

Anderson to Eisemann Company—F. W. Anderson, formerly assistant chief engineer of the Remy Electrical Co. and previous to that designing engineer with the Dayton Laboratories, has become associated with the engineering department of the Eisemann Magneto Co., Brooklyn, N. Y.

Canada Urges Winter Buying—Canadian dealers have tried various methods of increasing winter business. One tire company ran a coupon in the Toronto dailies, stating that if the coupon was returned to them on or before a certain date they would hold tires for delivery April 1 at present prices. Ford dealers advertised that they would give a trip to Ford, Ont., and Detroit, if the buyers

would purchase Ford 1917 models at the regular dealers' prices before a certain date in January, delivery to be made before March 1.

Williams Going to Antipodes—E. F. Williams, special foreign representative for Dodge Bros., will leave shortly for Manila, Australia and New Zealand.

Moynihan Gets Amazon Tire Position—Owen Moynihan, New York, has been appointed eastern district manager for the Amazon Tire & Rubber Co., Akron, Ohio.

Gribbon Gets Promotion—P. H. Gribbon has been appointed retail branch manager for the Willard Storage Battery Co., Detroit. Mr. Gribbon has been with the Willard company several years.

To Do Jobbing Business—The Black Hawk Tire Co. has been organized at Cedar Falls, Iowa, to do a jobbing business in motor car tires, tubes and accessories. C. B. Rhoades is president and manager.

Rocap Gets King Promotion—I. D. Rocap has been appointed sales and service engineer for the King Motor Car Co., Detroit. Mr. Rocap has been with the King company before this as technical expert.

Large Order for Gears Placed—The C. A. S. Products Co., Columbus, Ohio, has secured a contract for 20,000 steering gears from the Harroun Motor Co., Cleveland, Ohio. Orders now on file will keep the plant busy until August.

Duplex Acquires Site—The Duplex Motor Truck Co., Lansing, Mich., has purchased 15 acres and will construct a plant 800 ft. by 60 ft. The plans are for a daily production of 10 trucks. The new factory will employ 250 men.

Two N. D. Dealers Merge—Woll Bros. and the Kennelly Furnishing Co., motor car and accessory dealers of Mandan, N. D., have consolidated as Kennelly & Woll, and will extend their activities to include tire distribution and a service station.

Wichita Falls Truck Branches Announced—The Wichita Falls Motor Co., which has operated a plant at Wichita Falls, Texas, for the manufacture of motor trucks during the last 6 years, will establish branches at El Paso, Dallas and San Antonio. The company is now turning out eight trucks a day.

Pearce Tire Co. Elects—A. E. Pearce has been elected president of the Pearce Tire & Rubber Co., succeeding J. L. Smith. H. J. Atwood was elected secretary-treasurer to succeed P. C. Remick. The following directors remain on the board: A. E. Pearce, H. J. Atwood, J. L. Smith and F. L. Kerr.

Oakes Co. Makes Appointments—T. L. Dodd has been appointed special sales representative of the metal stamping department, and Louis Schwitzer has been made sales engineer in charge of production. Mr. Dodd was secretary and general sales manager of McClernan & Co., Chicago, for 10 years. Mr. Schwitzer was formerly engineer for the Empire Auto Co., Indianapolis.

Locomobile Co. Makes Appointments—Edwin A. Travis has been appointed general sales manager of the Locomobile Co. of America. Mr. Travis was formerly assistant sales manager, and before that was manager of the Locomobile branch in Boston. Delmar G. Roos has been appointed assistant chief engineer; Percy W. Hine, manager of the Bridgeport, Conn., branch and territory; Clinton B. Amorous, to general sales department; and Thomas E. Swayne, manager of the Los Angeles branch. Mr. Amorous was formerly

assistant purchasing agent. Mr. Swayne was with the Oakland branch. All the men have been with the company in different capacities.

Renfro Eastern Sales Agent—John F. Renfro has been made the eastern sales agent of the Sparks-Withington Co., with offices at New York.

Collins Joins Harroun—J. F. Collins has joined the staff of the Harroun Motors Corp., Detroit. Mr. Collins was formerly cost and system expert for the Cadillac company.

Chamberlain Is Promoted—R. E. Chamberlain, truck sales manager of the Packard Motor Car Co. of New York, has been promoted to the position of truck sales manager of the Packard Motor Car Co. of Detroit.

Shugers Leaves Auburn Company—J. Frank Shugers has resigned from the Auburn Automobile Co., Auburn, Ind. Mr. Shugers has been with the company since its beginning and was superintendent for 12 years.

Sets Record for Spokane Orders—The largest single order ever placed in Spokane, Wash., was made by the Paige distributor for two trainloads, or 160 cars. The Spokane firm expects to sell at least \$500,000 worth of cars during 1917.

To Make Demountable Rim—G. C. Allison, Canton, Ohio, is organizing a company with a capital of \$50,000 to manufacture a patented demountable rim. The new rim will be made in two styles, straight-side and quick-detachable. It is planned to start a factory about May 1.

K. C. to Have Briscoe Branch—The Briscoe Motor Co. is planning to erect a new assembly plant in Kansas City at an estimated cost of \$300,000. The plant is to be ready by next fall. Kansas City then will be made the distributing point for six states, Missouri, Iowa, Nebraska, Kansas, Oklahoma and Texas.

Scofield to Drexel Car Corp.—H. H. Scofield has been appointed director of sales for the Drexel Motor Car Corp., Chicago. Mr. Scofield has been connected with other motor car companies in the past, among them the Studebaker Corp., General Motors Co. and Paige-Detroit Motor Car Co. He was also with the Acme White Lead and Color Works at one time.

General Motors on Exchange—General Motors new common stock has been admitted to the New York exchange. In their application for admittance, the General Motors Corp. stated that of the \$45,314,000 common outstanding Dec. 9, the Chevrolet Motor Co. held \$16,644,500 in one certificate. The Chevrolet company agrees to hold the stock in its treasury and not to part with it without first publishing notice of its intentions 60 days in advance.

Canadians Plan Union of Dealers—An effort will be made by the Winnipeg Motor Trades Association to organize the whole of the motor industry in Manitoba into one body under the title of the Manitoba Motor Trades Association. To do this they have issued invitations to all motor trade representatives in Manitoba to attend a convention in Winnipeg, Feb. 13, as the guests of the Winnipeg association. A special program dealing with subjects of interest to the motor trade has been prepared.

Return of Patent Rights Asked—Suit to annul a contract for the promotion of a company to manufacture and sell a Ford starter has been filed in Peoria, Ill., by the Cray-Evans Co., Detroit, against Proctor P. Cooley, the Peoria Specialty Co. and the United Mfg. Co. The alleged failure of Cooley to organize the selling company is the chief cause of complaint. Assignment of all patent rights was made to Cooley. He attempted to organize the Peoria Specialty Co., with capital stock of \$50,000, but was unsuccessful, and the complainant wishes his patent rights

restored. The United Mfg. Co. has some rights in the Peoria Specialty Co. and was made party defendant.

Accessory Maker Changes Name—The Goodrich Accessory Association of Philadelphia has changed its name to the Goodrich-Lenhart Mfg. Co.

Rogers Leaves Jackson Motor Shaft—E. W. Rogers has resigned from the Jackson Motor Shaft Co., Jackson, Mich., to enter into business for himself.

Packard Enters Wall Street—The Packard has invaded Wall street, a salesroom 12 by 24 ft. having been engaged to show a custom job each week. While the exhibit is an experiment conducted by the New York agency,



SELLING UNDER DIFFICULTIES

If you knew your buyers would have to haul the motor cars you sold them 25 miles out into the country with no prospects of using them for 4 months on account of very deep snow, wouldn't you be somewhat discouraged? Well, this Maxwell touring car was sold under just such conditions, and it is shown starting on the homeward journey by way of a sled.

the manager states indications are that the community of towering sky-piercers and steel vaults lined with gold will make it successful, and it will be permanent.

Lamp Maker Dies—John W. Brown, president of the John W. Brown Mfg. Co., maker of motor car lamps and other parts, died recently at Columbus, Ohio. He purchased the

Increases in Capital

Allen-Bradley Co.—The Allen Bradley Co., Milwaukee, Wis., maker of electric controlling apparatus, has increased its capital stock from \$25,000 to \$136,000.

Victor Storage Battery Co.—The Victor Storage Battery Co., Rock Island, Ill., has increased its capital stock from \$100,000 to \$200,000.

Continental Motors Co.—The stockholders of the Continental Motors Co., Detroit, have authorized the forming of a new corporation with an increase in capital to a maximum of \$18,500,000, of which \$3,500,000 will be preferred and \$15,000,000 common. The new name will be the Continental Motors Corp.

Dixie Motor Car Co.—The Dixie Motor Car Co., Louisville, Ky., has increased its capital from \$150,000 to \$400,000.

Elkhart Carriage & Motor Car Co.—The Elkhart Carriage & Motor Car Co., Elkhart, Ind., has increased its capital stock from \$100,000 to \$300,000.

Porter Rubber Co.—The Porter Rubber Co., Salem, Ohio, has increased its capital from \$125,000 to \$250,000.

Falls Rubber Co.—The Falls Rubber Co., Cuyahoga Falls, Ohio, has increased its capital from \$300,000 to \$500,000.

Schact Motor Truck Co.—The G. A. Schact Motor Truck Co., Cincinnati, Ohio, has increased its capital from \$35,000 to \$100,000.

lamp manufacturing plant formerly conducted by Henderson, Harper & Hayden in 1888, and afterward developed it into the present business.

Western Motor Appliance Moves—The Western Motor Appliance Motor Co., Charles City, Iowa, will move its plant to Alma, Mich.

Gives Car to Hospital—The Winnipeg, Man., Motor Trades Association has given a motor car to the military convalescent hospital, Deer Lodge, for the training of men in the hospital.

Lewis Goodyear Consulting Chemist—Dr. Warren K. Lewis, professor of chemical engineering at the Massachusetts Institute of Technology, has been appointed consulting chemist for the Goodyear Tire & Rubber Co.

Marvel Co. Plant Almost Ready—The Marvel Accessories Mfg. Co. will move into its new plant Jan. 15. The company now occupies 1,200 sq. ft., and the new building, which is to cost \$60,000, will give more than double that amount.

Simpson to Sell Monroe Car—T. W. Simpson, formerly New England manager for the Grant Motor Car Co., has been appointed director of sales for the T. S. Johnson Co., distributor for the Atlantic Coast states of the Monroe car, with offices in Philadelphia.

Tractor in Durability Run—The Four Drive Tractor Co., Big Rapids, Mich., sent one of its tractors out on a durability run recently, giving demonstrations in various Michigan towns. The tractor pulled a wagon with a 2-ton load and was lighted for night travel.

Christensen With Motor Products—S. Christensen has been appointed special sales representative of the Motor Products Corp. Mr. Christensen was formerly traveling representative of the Vanguard Mfg. Co., one of the five companies now incorporated in the Motor Products Corp.

Aluminum Plans Expansion—The Aluminum Goods Mfg. Co., Manitowoc, Wis., is considering the establishment of a complete aluminum rolling mill unit in connection with its main works and foundry at Manitowoc. The company also operates large works at Two Rivers, Wis., and Newark.

Young Has Packard Agency—W. D. Young, who has been the Southern field representative for the Packard Motor Car Co., has been awarded the Packard agency for Birmingham, Ala. F. E. Fitzgerald, of the service department of the Packard company, will leave Detroit to handle the service department at Birmingham.

Master Carbureter Men Meet—The Master Carbureter Corp. is holding what is said to be the first dealers' convention ever held by a carburetor manufacturer. The meeting started yesterday in New York, and continues through today. Subjects of special interest to Master carburetor dealers were prepared, and the gathering will close with a banquet.

G. M. C. Extends Time—The time to exchange preferred and common stock of General Motors Co. for securities in the new General Motors Corp. on the basis of one and a third share of new preferred for one share of old, and five shares of new common for one share of old has been extended to Jan. 19. Exchanges will be made as of Nov. 1, and certificates may be deposited with the Guaranty Trust Co., of New York.

Maxwell K. C. Assembly Plant Begun—Work has begun on the new assembling plant which the Maxwell Motor Co. is erecting in Kansas City. The building will be of reinforced concrete with brick facing, and will be 100 by 300 ft. The new 1-ton truck will be assembled in the Kansas City plant, together with 10,000 pleasure cars. The specifications call for completion of the new building not later than March 1, and the plant is to be in operation in May or June. It will

assemble forty cars a day, the parts being obtained from Newcastle, Ind., Dayton, Ohio, and Cleveland, Ohio.

Barnhisel to General Tire—J. W. Barnhisel has opened the Kansas City office of the General Tire & Rubber Co., Akron, Ohio. Mr. Barnhisel was formerly secretary of the Motor & Machinists Supply Co.

Johnston to American Motors—R. B. Johnston has joined the staff of the American Motors Corp., New York and Plainfield, N. J., and will assist in the advertising and in the direction of sales. Mr. Johnston started the motor car column of the New York Sun and ran Leslie's motor bureau for a while. He also has been connected with the Chalmers company.

Steel Products to Move—The Detroit office of the Steel Products Co. will move to the Michigan Electric Welding plant in Detroit Feb. 1. Ray T. Middleton will continue as sales manager for the Steel Products Co. main plant at Cleveland, Ohio, and will have charge of Michigan Electric Welding sales also. The two companies were consolidated last summer.

Vacuum Oil Co. Builds—The Vacuum Oil Co., New York, expects to get into its new plant, now under construction near Paulsboro, N. J., by April 1. About 500 men will be employed. The location gives the company dock facilities for ocean steamers, and 18,000 ft. of railroad tracking will be provided for shipping. A pipe line under the Delaware connects the plant with the oil fields.

Electric Accessories Company Expands—Kansas City will have its first building devoted exclusively to electric motor car accessories when the E. S. Cowie Electric Co. opens its new mechanical department in a two-story building erected for this purpose. The business was founded in 1899 and is general sales agent in that territory for the Willard Storage Battery Co., and the official

Akron, Ohio—Kendall Tire & Rubber Co.; capital stock, \$500,000; incorporators, Lucas H. Kendall, K. P. Kahlike, Addison M. George, V. G. Warner and Carl F. Killian.

Akron, Ohio—Actual Gas Saver & Auto Air Brake Co.; capital stock, \$10,000; to manufacture accessories; incorporators, Carl M. Myers, J. Alvin Seller, Charles K. Strobel, I. C. Creighton and Mary E. Seller.

Bellefontaine, Ohio—Kauffman Mfg. Co.; to manufacture motor car parts; capital stock, \$50,000; incorporators, J. G. Morris, J. S. Kauffman, Brad D. Hiatt, Charles M. Johnson.

Bridgeport, Conn.—Connecticut Marine & Motor Appliance Co.; capital stock, \$50,000; incorporators, Frederick LePan, Roger O. Foust and T. R. Chatfield.

Camden, N. J.—Federal Automobile & Supply Co.; capital stock, \$100,000; incorporators, C. M. Reeves, W. A. Walton and T. R. Roberts.

Canal Fulton, Ohio—Keller Motor Company; capital stock, \$10,000; incorporators, A. P. Keller, O. F. Keller, C. W. Keller, Code Keller, Margaret Keller and Ilos Keller.

Charleston, W. Va.—Oilom Garage; capital stock, \$10,000; incorporators, F. H. Oilom, Harlow Oilom, J. H. McClintic, W. G. Mathews and George M. McClintic.

Cleveland, Ohio—Cimbre Automobile Mfg. Co.; capital stock, \$100,000; incorporators, M. F. Moore, A. B. Brennan, G. D. Evert, Theodore V. Moore and M. B. Glare.

Cleveland, Ohio—Britton Carburetor Mfg. Co.; capital stock, \$50,000; incorporators, L. M. Diehl, A. C. Diehl, Paul C. Jones, Carlton F. Schultz and Grant C. Middleton.

Cleveland, Ohio—West-Cleveland Motor & Supply Co.; capital stock, \$10,000; incorporators, Ralph T. Brown, John A. Elden, Abraham J. Ullman, Marie D. Wagner and M. W. Bracken.

Cleveland, Ohio—Stanley Steamer Car Sales Co.; capital stock, \$10,000; incorporators, Lewis W. Thomas, Sophia Z. Thomas, Mildred E. Thomas, Roscoe M. Ewing and W. B. Alford.

Cleveland, Ohio—Beckenbach Auto Livery Co.; capital stock, \$10,000; to operate a taxicab company; incorporators, John Beckenbach, P. Kuerderle, Lewis Drucker, B. C. Zieve and Arthur A. Neiger.

Cleveland, Ohio—Ingersoll Tire & Supply Co.; capital stock, \$10,000; to deal in tires and supplies; incorporators, Alan Ahrens, Zita A. Mangan, Carl F. Heinrichs, Louis G. Wesselmann and Alex L. Dreyfus.

repair shop for Gray & Davis, Simms Magne Co. and other concerns. A branch is maintained at Wichita, Kan.

Dividends Declared

Herschell-Spillman Co.—The Herschell-Spillman Co., North Tonawanda, N. Y., paid a 100 per cent stock dividend Dec. 30 in addition to the regular quarterly cash dividend.

Smith Motor Truck Corp.—The Smith Motor Truck Corp., Chicago, has declared an initial dividend, payable Jan. 15, on preferred stock for the period from Nov. 27 to Dec. 31, at the rate of 8 per cent per annum.

Electric Storage Battery Co.—The Electric Storage Battery Co., Philadelphia, has declared a dividend of 1 per cent on common and preferred, payable Jan. 2 to stock of record Dec. 18.

Keystone Tire & Rubber Co.—The Keystone Tire & Rubber Co., Pittsburgh, has declared a quarterly dividend of 3 per cent on common and 2 per cent and an extra $\frac{1}{2}$ per cent on preferred.

Pierce-Arrow Motor Co.—The Pierce-Arrow Motor Co., Buffalo, N. Y., has declared an initial dividend at the rate of 8 per cent per annum on preferred, payable Jan. 2 to stock of record Dec. 20.

Packard Motor Co.—The Packard Motor Co., Detroit, has declared a quarterly dividend of 2 per cent, payable Feb. 1.

Declares Extra Dividend—The Hall Lamp Co. has declared an extra dividend of 2 per cent for December on the \$600,000 outstanding common stock, making a total of 4 per cent for the month.

Hupp Dividend Declared—The Hupp Motor Car Corp. has declared a dividend of $1\frac{1}{4}$ per cent payable Jan. 2 to stockholders of record Dec. 20.

Bonniwell Resigns from Auburn—C. A. Bonniwell, for 2 years assistant sales and advertising manager of the Auburn Automobile Co., Auburn, Ind., has resigned, his resignation to take effect Feb. 1.

Gemmrl With Pennsylvania—J. R. Gemmrl, formerly sales manager for the Kansas City branch of the B. F. Goodrich Co., has been placed in charge of the Chicago branch of the Pennsylvania Rubber Co.

Parker Rust-Proof Factory at Flint—The Parker Rust-Proof Co., Detroit, will build a branch factory at Flint, Mich. The company plans to erect twenty-five branch plants in the leading metal cities of the United States.

Dauch Tractor Establishes Branch—The Dauch Tractor Mfg. Co., Sandusky, Ohio, has established a branch office and distribution point at Bloomington, Ill. Six salesmen will have their headquarters there and cover Illinois territory. C. L. Bragg, Chicago, is manager.

Miller Gets Nash Appointment—George P. Miller, secretary and treasurer of the Hokanson Automobile Co., Madison, Wis., has been appointed general agent of the Nash Motors Co., Kenosha, Wis., for the major part of the central section of the Mississippi valley. Mr. Miller will have charge of the distribution of Jeffery cars and Jeffery Quad trucks throughout the territory under the general direction of Alfred Reeke, general sales manager of the Nash company.

Sues for Patent Infringement—The Blackburn Specialty Co., Cleveland, Ohio, has brought suit against the Defender Autolock Co., Detroit, for alleged infringement of patents on key-operated electric and autolock switches owned by the plaintiff, and known as K-W Autolocks for Ford cars and Blaco Autolocks for other makes. The plaintiff alleges the K-W Ignition Co. is sole licensee of its patents for locking devices for Ford cars and no others are authorized to make and sell them under its patents.

Recent Incorporations

Cincinnati, Ohio—Combined Auto & Accessories Co.; capital stock, \$15,000; incorporators, T. C. N. Vance, Frank Cain, E. H. McElroy, George W. Harding and Thos. L. Michle.

Dayton, Ohio—Maxfer Auto-Truck Sales Co.; capital stock, \$10,000; to deal in trucks; incorporators, George H. Connelley, Herbert A. Ralls, J. L. Miller, William P. Jenkins and Erie J. Weaver.

Decatur, Ill.—Wheeler Automobile Garage Co.; capital stock, \$30,000; incorporators, Amos Wheeler, Nicholas Bommersbach and Claude Pling.

Grand Rapids, Mich.—Western Michigan Motor Co.; capital stock, \$10,000; incorporators, C. M. Crapo, A. A. Johnson, E. E. Johnson, Maurice Foreman and J. S. Crue.

Indianapolis, Ind.—Gordon-Little Co.; to deal in motor cars; capital stock, \$10,000; incorporators, C. C. Gordon, F. E. Little, F. W. Walters.

Kenosha, Wis.—Winther Securities Co.; capital stock, \$50,000; incorporators, M. P. Winther, William Martinson and W. M. Burke.

Kenosha, Wis.—Winther Motor Truck Co.; to manufacture and sell motor trucks, etc.; capital stock, \$300,000; incorporators, M. P. Winther, William Martinson and W. M. Burke.

Little Rock, Ark.—Little Rock Motor Car Co.; capital stock, \$10,000; incorporators, F. N. Fisher, D. M. Armstrong, Ellen B. Armstrong and A. Goodman.

Lockhart, Tex.—Shopshire Auto Co.; capital stock, \$5,000; incorporators, E. E. Shopshire, W. B. Swearingen and W. T. Patterson.

Louisville, Ky.—Main Street Garage; capital stock, \$5,000; incorporators, J. F. Marx, William Pfaffiner and T. Hicks Martin.

Louisville, Ky.—Thomas Garage; capital stock, \$25,000; incorporators, William A. Thomas, Vincent Thomas and Florence J. Gathof.

Memphis, Tenn.—Southern Motor Car Co.; capital stock, \$50,000; incorporators, S. H. Butler, J. M. Constance, R. E. Kellar, A. P. Galther and W. E. Kyser.

Milwaukee, Wis.—Achen Motor Co.; capital stock, \$45,000; incorporators, F. W. B. Achen, Arthur Gardiner, Robert A. Gardiner and Hugo C. Boorse.

Milwaukee, Wis.—Diener-Nelson Co.; to deal in new and second-hand cars, etc.; capital stock, \$10,000; incorporators, Walter H. Diener, Clair V. Diener, John E. Diener and May B. Diener.

Nashville, Tenn.—Falcon Motor Car Co.; capital stock, \$150,000; incorporators, J. G. Hamblett, G. A. McGill, E. E. Karlson, J. R. Manley and C. F. Kessler.

Plymouth, Wis.—Auto & Implement Co.; capital stock, \$25,000; incorporators, Hubert Mantheu, John DeMatt, Henry Tatel and Henry Termaat.

Rogers, Ark.—Apperson Motor Sales Co.; capital stock, \$15,000; incorporators, R. H. Whitlow, T. S. McNeil F. E. Miller and J. M. McClelland.

Saginaw, Mich.—Saginaw Graphite Co.; capital stock, \$250,000; incorporators, William L. Reinher, Walter D. Eddy and Edward Ewen.

Saginaw, Mich.—Coleman-Frank Co.; capital stock, \$15,000; to deal in motor trucks, vehicles, accessories, machinery and supplies and do repair work; incorporators, David A. Coleman, L. Leonard Frank and Anne W. Coleman.

Sandusky, Ohio—Vulcan Drop Forge Co.; capital stock, \$350,000; incorporators, Gustav von den Steinen, C. M. Horn, Paul J. Bickel, I. L. Evans and J. B. Putnam.

Sheboygan, Wis.—Wisconsin Auto Mart Co.; capital stock, \$15,000; incorporators, Gustave Hemlin, Albert Hemlin and Fred Miller.

Toledo, Ohio—Fielding Auto Sales Co.; capital stock, \$25,000; incorporators, Odell D. Fielding, Mary S. Fielding, Joseph S. Fielding, Stanley G. Fielding and Charles Hartmann.

Toledo, Ohio—Gillespie-Curtin Co.; capital stock, \$10,000; to operate a garage; incorporators, Harry A. Brinkerhoff, Louis C. Sorenson, Charles W. Riley, Elmer E. Davis and Leah M. Guyman.

Toledo, Ohio—Universal Garage & Service Co.; capital stock, \$5,000; to operate a garage; incorporators, John E. Carey, F. Martin Hoffman, Frederick C. Schaaf, Z. H. Niedermeyer and George N. Fell.